
Capital Concepts as Insights into the Maintenance and Neglect of Infrastructure

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In this article, I focus on the root causes of failure to maintain the components of “public infrastructure” once they are in existence. Although entrepreneurial enterprises routinely maintain privately owned infrastructure, public infrastructure is notably and typically neglected. Evidence of neglect is apparent and easily highlighted in the condition of bridges in the United States. Prior to the 2007 bridge collapse in Minneapolis, Minnesota, the National Transportation Safety Board reported that “one-quarter of all bridges in the U.S. are considered structurally deficient, and 80,000 bridges across the country need some sort of reconstruction or rebuilding” (Avien 2007). The flooding of New Orleans, which was apparently a consequence of failures to maintain levees and flood walls, heightened public unease over such neglect. This pattern suggests a systemic failure to maintain existing public infrastructure, including roads, bridges, water mains, sewerage systems, streets, and schools.

How should we interpret this pattern? What lessons should we glean from these and other examples of apparent infrastructure neglect? In his recent book *Bold Endeavors*, Felix Rohatyn advances his own answers: “These tragedies . . . are only harbingers of many national disasters that are to come. . . . America needs to rebuild

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its infrastructure. It is a critical national priority, a costly long-term investment, and a visionary enterprise. . . . [T]he federal government has traditionally been the indispensable investor in our nation. . . . [T]his book is an appeal that we treat the renewal of our infrastructure as a necessary federal capital investment” (2009, 1–5). Is Rohatyn right? Or is the neglect inherent in the very fact of public provision of such infrastructure? Is the neglect of public infrastructure endemic to its governmental provision and management and thus inherently inevitable? The answer to the latter two questions is yes. We can understand the neglect of public infrastructure most directly by focusing on two essentially metaphorical concepts of capital.

One prevailing but misleading concept of capital is the presumption that public infrastructure may be viewed as “public capital.” Is this label apt? In an economic sense, the legitimate concept of capital is premised on an entrepreneur’s ability to manage a combination of resources with the intent of earning an income for an enterprise as whole. Private property and monetary exchange afford the entrepreneur this ability. Hence, the aptness of the label *public capital* hinges directly on the extent to which public infrastructure can be managed in a way that is functionally analogous to the management of private capital. Capital maintenance ultimately pertains to the entrepreneur’s ability to maintain or enhance an enterprise’s expected income. What would the counterpart of enterprise income be for a government in attempting to reckon requisite maintenance of public infrastructure?¹ Metaphorically, the income counterpart would be the total benefits yielded by all components of infrastructure *as a totality*. The maintenance problem arises from the absence of ownership of public infrastructure and the fact that the infrastructure’s benefits yield no appropriable sales revenue that can serve as a guide to maintenance.² Hence, neglect appears to be inherent in the fact of government provision. Labeling components of infrastructure as public capital is simply a metaphor that misleads the electorate into thinking public infrastructure can be successfully maintained.

A second concept of capital accounting for neglect manifests itself in the actions of public officials seeking to enhance the “political and bureaucratic capital” represented by their own personal career objectives. We may expect that various forms of self-defined, time-structured strategies used by elected and appointed public

1. Tax collections divorced from incremental use are no candidate. Fred Foldvary notes that “[a]n alternative system is fiscal equivalence, paying for what you get . . . funding their public services from rents and user fees rather than taxing improvements and productive efforts.” Foldvary explains that “user fees are paid in direct exchange for receiving a service rather than imposing an excise tax on the purchase of goods or on an activity” (1993, 197, 202). However, user fees are also problematic in terms of their capacity to provide a guide to infrastructure maintenance.

2. These issues appear to be as old as economics itself. In *The Wealth of Nations*, Adam Smith wrestled with the practical aspects of financing and maintaining public infrastructure. He was well aware of the importance of privatization as a means to infrastructure maintenance, but he seems to have been unable to arrive at a consistent and coherent perspective with respect to public policy. After discussing the requisite incentives for maintenance achievable by privatizing a canal in France, he proceeded to discuss the incentives for neglect that would attend a similar policy with respect to “high roads” in England ([1776] 1982, 724).

officials will thwart what some may view as a more rational maintenance of infrastructure facilities. Career, whether focused on selfish or humanitarian aspirations, becomes the metaphorical capital that public officials maintain as they deploy the means (metaphorical capital goods) at their disposal. Action undertaken to maintain political and bureaucratic capital may entail, in some instances, that neglect of public infrastructure is a rational course of action for officials who bear direct or indirect responsibility for maintenance. In other words, infrastructure maintenance's time stream of public benefits is not the principal motivational consideration for officials responsible for budget formulation and the allocation of outlays.

Capital concepts point to a sharp distinction between the processes by which private and public infrastructure are maintained. Although the facilities that constitute public infrastructure are commonly viewed as a form of public capital, evidence suggests that government cannot maintain this infrastructure in a manner analogous to the maintenance of private infrastructure.³ The nature of governmental institutions necessarily entails neglect of public infrastructure and implies that private ownership and market incentives are critical to the maintenance of all infrastructure.

Private-Infrastructure versus Public-Infrastructure Maintenance

We can understand the neglect of public infrastructure better by comparing the process of private capital maintenance and the process that characterizes maintenance of so-called public capital as embodied in the countless disparate components of infrastructure that range from schools to sewerage systems. Assume that the government is simply an analogue of the entrepreneurial enterprise in implementing a plan for the use and maintenance of infrastructure facilities. To view the government in this way, one must treat the components of public infrastructure as counterparts of the capital goods that enterprises deploy in the implementation of business plans. In essence, the entrepreneur invests in the maintenance of capital to obtain a desired time stream of income. The question is, Can a government do the same?

Income as the Focus of Private-Infrastructure Maintenance

We can glean an important insight into public-infrastructure maintenance from the process by which a business firm maintains its infrastructure. Private property and monetary exchange enable the entrepreneurial enterprise to use market prices to

3. The assumption of government's maintenance responsibility no doubt arises from the notion that the services these facilities yield are public goods that cannot be provided privately. However, analysts have called attention to evidence that public infrastructure's services can be provided through private entrepreneurial undertakings (Niskanen 1971; Wollstein 1974; Foldvary 1993, 1–15; Rothbard 2004, 1029–41; Hoppe [1993] 2006, 7; Block 2009, 232).

evaluate subjectively the prospective opportunity costs and benefits associated with alternative schedules of maintenance.⁴ Implicit in this reckoning is the entrepreneur's ability to distinguish capital and income. Income is a way of looking at capital in terms of its expected return over the entrepreneur's planning horizon. In contrast, capital, as a judgment of net present worth, is a way of looking at the totality of future income from the point of view of the entrepreneur's reaction to market uncertainty and of his time preference, or rate of discount. Income is the amount that can be consumed within a definite period without lowering the expected or desired investment worth of capital as reckoned by the entrepreneur (Friedman 1957, 10; Mises [1949] 1998, 261; Hayek [1941] 2007, 277–78).

For the entrepreneurial enterprise, investment in maintenance is not necessarily focused on particular resources, but rather on how the entire complementary combination of resources contributes to the enterprise's profitability. The resources at the business entrepreneur's disposal are capital goods, which may take the form of "pieces of land, buildings, equipment, tools, goods of any kind and order, claims, receivables, cash or whatever" (Mises [1949] 1998, 262). The critical distinction is that capital goods do not in themselves constitute capital, and their existence does not necessarily assure income or imply anything with respect to their maintenance. These things become an aspect of capital only when they are owned, deployed, and maintained in the coherent pursuit of a single, unified plan that a specific entrepreneurial enterprise undertakes. Capital, in distinction, emerges as the entrepreneur's reckoning of the net present monetary worth of his own plan. By attending to the distinction between capital and capital goods, we understand that without cohesive entrepreneurial plans, the things that would otherwise be capital goods would not even be capital goods (Lachmann [1956] 1978, 13).

Within this calculational context, the entrepreneur can make rational choices to maintain capital as reflected in changes in the enterprise's prospective worth. Because of market changes and the uncertain success of entrepreneurial objectives, actions taken to maintain capital are fundamentally speculative. Hence, for the entrepreneurial enterprise, depreciation is always a matter of entrepreneurial judgment with respect to its effect on future capitalized income (Lachmann 1986, 66–67; Osterfeld 1992, 23–30). Investment in the maintenance of capital, as distinct from the maintenance of capital goods, protects the prospects of a desired stream of future income for the enterprise. Therefore, depreciation must always be judged within the context of the complementarities between various capital goods, and a maintenance decision is never focused necessarily on "wear and tear" sustained by particular capital goods as such. Rather, the focus must always be on the capital good's effectiveness in serving the complementary function of attaining the desired level of current and future

4. The task of economic calculation for the individual, according to Mises, "is to adjust his actions as well as possible to his present opinion concerning want satisfaction in the future." Mises also notes: "The question . . . is whether a certain course of conduct increases or decreases the productivity of our future exertions" ([1949] 1998, 232, 511).

profitability. Each maintenance decision ultimately relates to the most profitable complementarity within a chosen combination of capital goods employed in pursuing an entrepreneurial plan (Hayek 1941; Lachmann 1986, 63; Mises [1949] 1998, 512). The maintenance of private capital under conditions that allow economic calculation has the following implicitly interrelated but critically distinct features:

- Prospective monetary benefits of maintenance are appropriable by the actors undertaking the maintenance (that is, costs and benefits are borne by the same entity).
- Actors (business entrepreneurs) can evaluate the anticipated, yet uncertain, monetary trade-offs between current investments in maintenance and the desired future income return.
- The entrepreneurial enterprise can integrate plans for the maintenance of all capital goods into a comprehensive business plan focused on the maintenance of a desired time profile of future income (Hayek [1941] 2007, 277).
- Physical deterioration of particular capital goods matters only to the extent that it is judged to reduce the future monetary income yielded by all the capital goods as an integrated, complementary combination.
- The business entrepreneur can rank maintenance priorities and assess the extent to which total revenue productivity of all the capital goods as a complementary combination is affected.
- Maintenance plans for particular capital goods are unique to the individual entrepreneurial enterprise, reflecting the enterprise's own market expectations and the particular complementarities sought in its chosen combinations of capital goods.
- Because maintenance is tied to a monetary income, the enterprise can link its maintenance investments to the demand for its products as expressed by its customers (Lachmann 1986, 67–71).

Individual entrepreneurial enterprises acting on their own behalf—not on behalf of society as a whole—necessarily undertake capital maintenance. Only within the context of the entrepreneur's plan or business strategy does he make subjective reckonings of what investments constitute capital maintenance. These judgments are essentially calculational conjectures that can be made with a degree of rationality that would be impossible in the absence of private property and monetary exchange. The success of private-infrastructure maintenance can be reckoned only in the context of individual entrepreneurial plans for an entire enterprise. Hence, the extent to which economic maintenance of private infrastructure has actually occurred is a judgment each enterprise makes as it assesses the success of its own business plan. Because all markets are perpetually evolving and each actor faces uncertainty, any reckoning of capital maintenance is personal, entrepreneurial, and essentially speculative (Lachmann 1986, 67).

Public Capital Is a Misleading Label in the Context of Maintenance

Metaphors are commonly thought to provide a framework for new insights and, as such, their use is generally applauded, but metaphors may also be a form of misleading and even fallacious labeling. Is the term *public capital* as applied to public infrastructure metaphorical or literal? If it is metaphorical, is it apt in light of the nature of public-capital maintenance?

If the maintenance of private infrastructure creates value in terms of the maintenance of a desired stream of entrepreneurial income, what is the analogy for public-infrastructure maintenance? It is the total public benefits yielded by the aggregate of heterogeneous facilities, only some of which are elements of complementary groupings. Assume that the government is an acting, unitary entity making maintenance decisions with the intent of maintaining the total public benefits this infrastructure presumably yields. The phrase *unitary entity* here simply means that the government formulates and undertakes its plans as though prompted by one mind and not by individual bureaucrats and legislators with self-seeking but frequently conflicting aspirations. The government is assumed to act in a unified way to maintain public infrastructure on the basis of an attempted imputation of the total net benefits that accrue to the public at large.⁵

If the government is to maintain public capital, it must somehow impute a surplus of total social benefits yielded by this aggregated capital stock that exceeds some type of reckoning of opportunity costs. Some type of capital calculation is unavoidable. As public capital, the components of public infrastructure are seen as publicly owned capital goods that presumably yield a total or aggregate of public benefit. The use of and need for a particular facility may seem to extend into the indefinite future. Even though an individual facility depreciates, it may be repaired or replaced to assure continued utilization. However, for a government functioning as an acting entity, rational management of facilities would have to encompass all public facilities simultaneously. Even if the government could act as though it had the benefit of a unified mentality, the absence of property rights and monetary exchange would preclude a coherent maintenance plan aimed at maximizing total net public benefits.

The problem the government encounters in maintaining public infrastructure is that benefits to the public do not generate a stream of monetized revenue from members of the public who avail themselves of the infrastructure's services.⁶ The government has no guide in planning maintenance expenditures for the disparate

5. I make this assumption only for purposes of discussion and not with the intent of defending its legitimacy or feasibility. The assumption not only represents an implied interpersonal comparison of "utility," but also exemplifies what Mises refers to as "hypostatization." He notes: "The worst enemy of clear thinking is the propensity to hypostatize, i.e., to ascribe substance or real existence to mental constructs or concepts. . . . Only individuals act" ([1962] 2006, 70–71).

6. Again, it might appear that the problem of the monetized revenue stream is allayed, in part, to the extent that user fees for actual use of infrastructure services can be collected.

facilities under its purview. Although in some narrow instances tolls can be collected for marginal use, the government cannot calculate the anticipated yet uncertain trade-offs between total current expenditures for maintenance and the comprehensive future public benefits attributable to these outlays. For example, the government may have to choose between the repair of highways and the renovation of a public school. Without an integrated revenue stream generated from marginal public use of each infrastructure facility, the government has no means of reckoning a rational trade-off between maintenance projects for such disparate facilities. There is a “chaotic disconnect” between marginal intended public use of infrastructure and any planned maintenance that the government may consider. In contrast, the entrepreneurial enterprise makes no decision with respect to use without taking projected maintenance into account. However, the calculational fulcrum on which these marginal trade-offs are balanced is the maintenance of a desired time profile of future enterprise income. In contrast, the users of public infrastructure obviously pay little heed to the requisite maintenance that arises from their marginal use of facilities. For individual public-infrastructure facilities, users and the government as the maintainer are necessarily different acting entities. Virtually no calculational linkage connects the decisions to use and the decisions to maintain. Hence, the action of using and the action of maintaining necessarily impose some sort of unmeasurable externality on others.

Several inferences highlight the misleading nature of the *public capital* label:

- Bureaucrats have no rational means of assessing the relative benefits or opportunity costs of resources devoted to new infrastructure as opposed to maintenance of existing infrastructure.
- Prospective benefits of infrastructure maintenance are not, in general, appropriable by those bearing the economic burden of maintenance; no mechanism exists to facilitate exchange between the groups incurring differential benefits and opportunity costs.
- Means are unavailable to assess the uncertain and changing trade-offs between increments to total financial outlays on infrastructure maintenance and increments to total future benefits derived from such maintenance.
- In general, means do not exist for government decision makers to reckon the *relative* trade-offs between maintenance of some existing facilities of public infrastructure as opposed to maintenance of other facilities.
- Maintenance decisions for public infrastructure are based largely on physical deterioration with little rational reckoning of benefits or opportunity costs involved; hence, some complementary facilities are neglected that should be maintained, and other facilities that should be abandoned are maintained.

Cost-benefit analysis provides no solution to this problem (Buchanan 1969, 60). One may be tempted to assert, however, that the collection of user fees for the services of public infrastructure offers a solution. In the case of certain facilities, such

as those used in transportation, fees can be collected for incremental public uses. User fees would provide a monetary income stream that might be appropriated in part for maintenance purposes. However, would the government be able to use this income stream as feedback information in judging the extent of the maintenance required to maintain the social benefits these facilities yield? The answer is a qualified yes. However, a problem still arises in taking into account the complementarities that are always present. Fee-generating facilities are usually part of a broader, somewhat integrated infrastructure in which they yield services that may be complementary in part to the services provided by facilities for which no fee or toll revenue can be collected. The issue is the maintenance of the functional complementarities that exist between the infrastructure's various components. If tolls are not collected for each facility, the government is left with an imputation problem that precludes a balanced maintenance that preserves these complementarities. No calculational means of charging tolls exists that would account for the complementarities between the services yielded by groupings of such facilities. But again the critical issue is that even with the collection of user fees or tolls on some facilities, physical deterioration rather than maintenance of total public benefits would be the principal feedback process inducing the government to maintain complementarities. Ludwig von Mises notes: "Government would badly need the concepts of capital and income as a guide for its operations. However, in an economic system in which there is no private ownership of the means of production, no market, and no prices for such goods the concepts of capital and income are mere academic postulates devoid of any practical application. In [such an] economy, there are capital goods, but no capital" ([1949] 1998, 264).⁷ Hence, the common label *public capital* for public infrastructure is a totally inapt and misleading metaphor because the planning process focused on the maintenance of income that underlies true capital is entirely absent. The entrepreneurial plan itself is the key element that allows capital goods to become capital. Without such a plan, such goods are only things without a clearly valued purpose. Without a plan that generates appropriable revenue from the sale of a good or service, there is no calculational guide to maintenance.

Maintenance of Legislative and Bureaucratic Capital

The idea that public infrastructure represents a form of public capital is revealed as no more than an inapt metaphor by the absence of a calculational foundation for its maintenance, but other forms of essentially metaphorical capital also distract from the maintenance of public infrastructure. Legislators and bureaucrats maintain political and

7. Joseph Schumpeter observes: "capital is then an agent in the exchange economy. A process of the exchange economy is given expression in the capital aspect, namely the transfer of productive means to the entrepreneur. There is therefore in this sense only private and no 'social' capital" ([1934] 1959, 122–23). Schumpeter's use of the word *social* in this context would be more accurately read as "public." Although Schumpeter's reference to social capital does not necessarily refer to public infrastructure as such, his intent is clearly to emphasize the idea that capital is inherently in the province of the entrepreneur who functions in an environment of private property and implied freedom of exchange.

bureaucratic capital. This metaphor refers to the time-structured strategies public officials employ in pursuing their public and political careers.⁸ For both legislators and bureaucrats, careers become the capital they maintain or enhance by the strategies they pursue. “Capital maintenance,” in this context, refers to the actions that legislators and bureaucrats take to maintain their power, influence, and job satisfaction. In maintaining this metaphorical capital, do government officials direct their actions toward objectives largely or totally divorced from public-infrastructure maintenance? In their pursuit of personally chosen ends, they must husband tools or metaphorical capital goods to implement their plans. The metaphorical capital goods (as distinct from self-defined metaphorical capital) that legislators and bureaucrats must employ depend directly on the respective constituencies’ they must serve and on their own career objectives. These capital goods may be intangibles that involve subjective judgments about the future and the actions required to achieve career ends. Here I examine the extent to which these actions are perverse to the interests of maintaining public infrastructure.⁹

Maintenance of Legislative Capital in Infrastructure Neglect

In the preceding discussion, I assumed that the government is a single thinking entity acting on behalf of the public. In reality, however, the government consists of many individual persons, each with his own self-defined objectives. One such group comprises the legislators, who have the redoubtable power to affect the allocation of economic resources in legislative roll-call votes, for example. The legislators’ actions have been explored as a kind of political entrepreneurship in which their objectives pertain to the protection of their influence in the legislature and their reelection prospects (Denzau and Munger 1986). The legislator may or may not be motivated by a sense of civic responsibility and public duty. One theoretical approach identifies two broad concerns: legislative power and reelectability. The employment of these metaphorical capital goods may be viewed as having a time structure analogous to that analyzed in Austrian capital theory.¹⁰ In this context, the legislator’s votes to commit resources to the maintenance of public infrastructure may realistically be seen

8. Public officials have been described as “utility maximizers” (Downs 1967, 81–82), but such a characterization is relatively static in that it ignores planned, goal-oriented actions undertaken over the course of time to achieve uncertain future ends. The concept of utility itself ignores the fact that valuation can never be more than a relative ranking that an individual human being makes at a particular moment. In addition, all action is undertaken with an awareness of time and a recognition that something must be “invested” in the present to attain some type of future objective. Hence, the official’s career is a more likely motivator of self-defined action than is static utility. By labeling the official’s career as a type of metaphorical capital, one accommodates the reality that public officials make short-term sacrifices to achieve longer-term, more highly ranked personal objectives. These aspirations may take the form of either pecuniary or nonpecuniary ends.

9. This pattern of behavior is an extension of the perverse-incentive problem analyzed in the public-choice literature.

10. The discussion here relies heavily on a brilliant paper by Edward López (2002). López employs the terms *representative capital* and *reputational capital*. However, the terms *power* and *reelectability* are used here as reasonably approximate synonyms.

as a decision to use the capital good of *power* to enhance the capital good of *electability*. At the same time, however, such actions must also be seen as an effort to maintain the *capital* as represented by the legislator's *career*.

The legislative entrepreneur's strategic actions are manifested in roll-call votes that he hopes will augment his power and reelectability. Power generally refers to the legislator's political standing and influence in the legislature. Committee assignments, seniority, working alliances with prominent legislators, and legislative experience all signal a legislator's power. Reelectability relates to party affiliation, voting record, campaign platform, name recognition, and any other attributes that may predict political performance (López 2002, 213–14). Electoral defeat indicates that the capital good of reelectability is totally depleted and may be seen as equivalent to bankruptcy.

The labeling of power and reelectability as capital goods may require critical clarification. As noted previously, Mises distinguishes capital goods and capital itself, emphasizing that capital is a feature solely of the market economy. Capital goods are the assets the entrepreneur marshals in pursuit of a business plan designed to earn a monetary income. Capital is the entrepreneur's appraisal of the capitalized worth of that business plan. Although legislative capital is not a feature of the market economy as defined by Mises, the distinction between capital and capital goods remains critical even in this metaphorical context not directly related to market interactions. For any actor, only one type of capital can exist, which is the value that the actor ascribes to his overall plan. The nature of the plan establishes which things can serve as capital goods. The actual capital in this political-capital framework is the legislator's valuation of his political career, whose maintenance depends on how he manages these two capital goods or assets.

In this framework, the legislator must attend to the interests of three different blocs of power: unorganized voters in his district, organized interest groups, and party leaders in the legislature (López 2002, 211). Members of each of these power blocs seek some type of advantage—sometimes called “rents”—from particular legislative actions or roll-call votes. Thus, the legislator, in choosing his position on each roll-call vote, must serve the members of these respective groups in a manner that maintains or enhances his career capital. However, each roll-call vote involves a possible trade-off between power and reelectability.

Because this trade-off is uncertain, the legislator must apply entrepreneurial judgment in each roll-call vote (López 2002, 211). Serving one bloc may (or may not) involve a large sacrifice in terms of support from other blocs. Organized interests and party leaders are powerful in the legislator's political world. Hence, particular efforts to serve unorganized voter constituents may involve a significant depletion of power because such action may entail a neglect of organized constituencies. Conversely, on another roll-call vote, serving members of organized interests may involve little sacrifice of reelectability as anticipated in the support of voter constituents.¹¹

11. That a particular disappointed constituency is not organized suggests that the legislator may not bear a high opportunity cost if he ignores the constituency's interest on a particular legislative vote.

In maintaining career capital, the legislator may choose to serve voter constituents up to the point at which reelection is reasonably well assured, but beyond that point serving constituents may exact a large sacrifice of support from party leaders and organized interest groups.

The rationale for focusing on legislator's roll-call votes is that each vote is motivated by goals that have a time structure in the allocation of power and reelectability in serving the power blocs. The time structure reflects the fact that the roll-call votes affect the power blocs differently at different moments in time. Some votes have virtually immediate impact and are analogous to the production of consumer goods or lower-order goods in Austrian capital theory. A vote on a downward adjustment of home assessments in levying taxes may be an example of such a decision. In contrast, the legislator may view a vote on relaxing constitutional constraints on term limits as an action with long-term implication for his career capital.

Neglect of public infrastructure may arise from the legislator's failure to consider the complementarities between the two political capital goods—power and reelectability. One can readily envision scenarios in which neglect of public infrastructure may arise from the legislator's efforts to enhance his power within the legislative body. Assume that the legislator has been enhancing his legislative power, perhaps to the neglect of his reelectability. This neglect may be reflected in the legislator's failure to assure budget funding for the maintenance of public infrastructure in his district. In so doing, the legislator may have focused on the rent seeking of organized special interest or party leaders. In the eyes of other affected constituents, however, such infrastructure neglect may be seen as political neglect and therefore may reduce his reelectability. If the legislator operates under the supposition that users of public infrastructure are an unorganized power bloc, he may be lulled into inattention to constituents' interests. In the face of evident infrastructure neglect, however, this unorganized interest group may organize to defeat the legislator in the next election.

Neglect of existing infrastructure may arise from a legislator's focus on the construction of new infrastructure. Although the legislator may neglect budget funding for existing infrastructure maintenance, he may have established sufficient power and reelectability to remain in office and pursue other legislative objectives for his voting constituency. For example, the legislator may have sufficient seniority and standing in the legislature to sponsor and achieve the passage of funding for new infrastructure facilities in his home district. In such pursuits, the legislator conceivably has humanitarian motives that involve an effort to help a segment of his voting constituency. At the same time, he will understand that such actions may also enhance his reelectability. Such projects may draw significant press coverage, enhancing his public image. Although such an accomplishment may be well motivated and may enhance the legislator's reelectability, existing infrastructure will suffer neglect.

Such neglect may also arise from the legislator's shortage of power, reflecting his failure or inability to generate support in the legislature for budgets that will finance infrastructure maintenance in his home district. This power shortage may be

manifested in a failed logrolling negotiation or a lack of sufficiently strong alliances in the legislature. The consequence may be the prevention of maintenance of highways, streets, sewerage systems, and bridges in the legislator's home district. Because the legislator lacks, for example, seniority in the legislature, this neglect may occur even though he is a well-intentioned champion of efforts to maintain these infrastructure facilities.

A legislator's time preference is critical in the timing and allocation of his two political capital goods—power and reelectability. One consequence is that any time-structured resource allocation for maintenance that derives from his actions may be totally divorced from any time cycle of deterioration or unusability that the public-infrastructure facilities may experience. Hence, in the absence of an overt threat to his reelection, the legislator's actions over time may well result in chronic neglect of such facilities.

Maintenance of Bureaucratic Capital and the Neglect of Infrastructure

Like political capital, bureaucratic capital is a metaphor that can shed light on public officials' actions or inaction over the course of time. The bureaucrat of concern here is the senior executive with some direct or indirect responsibility for public infrastructure and with the power to affect how a bureau allocates its resources. As in the case of the legislator whose capital takes the form of a career, in this case the metaphorical capital in question is the bureaucrat's career. The bureaucrat's view of his career may take into account several subjectively defined sources of appeal that others have listed and discussed.¹² In any case, the career is the overarching metaphorical capital that governs the bureaucrat's actions and the use of the resources at his disposal. This metaphorical capital suggests a time structure of maintenance that may be at odds with concerns over the maintenance of public infrastructure. The bureaucrat's overriding concern with career applies even in the case of bureaucrats who have direct managerial responsibility for maintenance of particular items of the public infrastructure. I focus here on the actions and aspirations of managing bureaucrats who can be instrumental in determining how resources are committed to infrastructure and its maintenance.

Although the bureaucrat is not an elected official, he must realistically face his own benefactors, constituencies, and power blocs in managing the capital defined by his own career aspirations. These parties include: (a) appointing officials to whom the

12. William Niskanen mentions salary, perquisites of office, public reputation, power, patronage, the bureau's output, ease of making changes, and ease of managing the bureau (1971, 38). Anthony Downs gives a similar list, including power, income, prestige, security, convenience, loyalty, pride in work, and desire to serve the public interest (1967, 2). Both of these economists take a rather static approach to defining the arguments of a utility function. In other words, they do not emphasize the time-structured strategies that may define the bureaucrat's actions.

bureaucrat reports, (b) sponsoring legislators, (c) subordinates in the bureau,¹³ (d) that segment of the public most sensitive to the bureau's activities (that is, self-selected "stakeholders"), and (e) prospective future nongovernmental employers. The latter group in this list would especially concern appointed executive bureaucrats whose long-term career objectives may lie outside of government.¹⁴ The bureaucrat's ability to deal with and satisfy these constituencies' demands or wishes determines the nature of the metaphorical capital goods he must marshal in managing the capital represented by his own career.

What are these metaphorical capital goods? The question pertains not to what the bureaucrat may want in a particular job, but rather to the resources he must employ to succeed. A thoughtful answer to the question requires a realistic appraisal of the ostensibly ambiguous nature of success for the executive bureaucrat. He may gear his activities to faithfully trying to achieve the bureau's statutory goals, or he may simply focus on appeasing or pleasing his various constituencies. There are no precise, quantifiable criteria to measure objectively the bureaucrat's success. As James Wilson notes,

The head of a business firm is judged and rewarded on the basis of the firm's earnings—the bottom line. The head of a public agency is judged and rewarded on the basis of the appearance of success . . . when success can mean reputation, influence, absence of criticism, personal ideology, or victory in policy debates. Sometimes, of course success means achieving the agency's goals . . . but many agencies have goals so vague, controversial or difficult to achieve that progress toward their realization is hard to assess. Moreover, rewards for public executives are not wholly, or even primarily, tangible; just as important are the intangible ones, egotistic or ideological considerations such as popularity, a reputation for power or identification with a cause. (1989, 205)¹⁵

In essence, this perspective suggests that the bureaucrat's output and productivity are what the various constituent groups are led to think it is. Of course, the bureaucrat may be motivated by more than just the appearance of success, but even in this case success may be only a subjective sense of job satisfaction known only to the bureaucrat. Nonetheless, these observations provide a lens through which one can

13. Although the bureaucrat has managerial authority over subordinates, he is unlikely to experience sustained success in his position if he pursues courses of action that ignore the career aspirations of those under his organizational control.

14. James Q. Wilson observes that the appointed bureaucrat's career may involve relatively brief stints in a particular government position. For the executive bureaucrat, longer-term career goals would no doubt involve employment in the private sector and perhaps in academic institutions. Even though the appointed official's actions may not directly affect the interests of such prospective employers, the official must at the same time be sensitive to reputational issues connected with his actions in public office (1989, 209).

15. With the benefit of firsthand experience in a government bureaucracy, former Treasury secretary Michael Blumenthal notes the intangible, subjective nature of bureaucratic success: "You can be successful if you appear to be successful . . . appearance is as important as reality" (qtd. in Wilson 1989, 205).

begin to recognize the plethora of aspirations and concerns that may distract the bureaucrat's attention from infrastructure maintenance.

The capital goods required to give the bureaucrat the appearance of success include: (1) budgets, (2) reputation, and (3) control. Although these aspects of employment do not necessarily include everything that the bureaucrat might want in a particular governmental position, they compose the resources required to establish the appearance of success. These metaphorical capital goods present the bureaucrat with both complementarities and trade-offs in defining and constraining the actions that best enhance his longer-term career aspirations. In considering these actions, how will infrastructure maintenance weigh into the bureaucrat's employment of these metaphorical capital goods? The bureaucrat will tend to employ these capital goods to foster the maintenance of public infrastructure if such action maintains or enhances the prospects of attaining the goals that define his career ambitions. Otherwise, passive neglect of infrastructure may well be rational for the bureaucrat.

Although the bureaucrat's success may be highly subjective, the complementarities and trade-offs of employing the identified capital goods reflect genuine uncertainty in light of his various constituencies' disparate and evolving interests. For example, at any particular moment, larger budgets generally augur well for the bureaucrat's reputation and might increase the control (degree of latitude) he enjoys in dealing with his constituencies.¹⁶ Larger budgets accommodate the ambitions of subordinate bureau personnel by offering the prospect of greater opportunities for promotion and career enhancements.¹⁷ They also may serve the aspirations of both the appointing official to whom the bureaucrat reports and the sponsoring legislators; the latter may want the bureau to undertake projects with higher public profiles than more mundane infrastructure maintenance has. Hence, from the bureaucrat's perspective, achieving a larger budget for the bureau may in some cases be more important than how funds are actually spent.

If the bureaucrat succeeds in his endeavors, what is the likelihood that infrastructure maintenance will be a prominent concern as he plans his actions? The bureaucrat must be sensitive to the general public in considering programs of infrastructure maintenance that the bureau might undertake. Infrastructure neglect might conceivably draw unfavorable press, affecting the bureaucrat's reputation among the general public. However, unless the affected infrastructure involves roads or bridges, public reaction to neglect may well be tepid or nonexistent. In short, given the bureaucrat's possible motivations, larger government and expanding public budgets do not necessarily imply the availability of more resources for maintenance of depreciating infrastructure. If the relative neglect of infrastructure occurs without

16. On the bureaucrat's need for control, see Lewis 1980, 18–19.

17. Aaron Wildavsky describes well the symbiotic relationship between bureaucrats and legislators: "If the agencies suddenly reversed roles and sold themselves short, the entire pattern of mutual expectations would be upset, leaving the participants without an anchor in a sea of complexity" (qtd. in Niskanen 1971, 40–41).

significant negative feedback from the public, the bureaucrat may perceive greater career advantage in pursuing ventures that are more likely to draw favorable reaction from appointing officials and sponsoring legislators.

To the extent that the bureau is successful in achieving larger budgets, the bureaucrat is likely to allocate the additional resources to the building of new infrastructure facilities than to the maintenance of existing facilities. If the bureaucrat were to throw his support behind the new project, he is more likely to be cast in a more prominent and favorable public light. Hence, a public official's actions and goals in employing the metaphorical capital goods of reputation and control may well be at odds with the maintenance of existing public infrastructure. New infrastructure may offer the bureaucrat more reputation-enhancing ways of dealing with his constituencies. Projects aimed at the maintenance of existing public infrastructure may be less newsworthy and hence yield the bureaucrat less political leverage than new projects. Such attention generally translates into enhanced control.

Although new infrastructure projects find favor with the constituencies that the bureaucrat must please, they tend to crowd out the possibility of funding for maintenance of existing infrastructure. The money spent for these projects will not necessarily reflect any attempt at a rational reckoning of collective need (Downs 1957, 91). In the undertaking of actions with respect to infrastructure maintenance, efficiency in resource allocation is not likely to be a prominent consideration (Holcombe 2002, 148–49). The bureaucrat may not be particularly concerned with the net social benefits of one infrastructure project as opposed to another competing project. He will not reckon opportunity costs in terms of forgone or relinquished social benefits associated with another, competing project. Moreover, as he chooses his action, he is likely to employ a planning horizon that may not be congruent with the realization of any benefits afforded by publicly supported maintenance projects.

The bureaucrat will focus on how his reputation and control are likely to be affected by choosing to support one infrastructure project over a competing alternative. He will reckon benefits in terms of his own expected gain as reflected in his future career prospects, both in and out of government. For example, in considering a maintenance project, he may judge the benefits in terms of the likelihood of winning a sought-after promotion, or he may have longer-term aspirations to a particular position outside government service. Even in the face of decisions that may run counter to infrastructure maintenance, however, the bureaucrat will always attempt to explain his actions in terms of the project's greater benefit to the community (Downs 1957, 91).

Conclusions

Capital concepts provide insight into the neglect of private infrastructure. The institutions of private property and monetary exchange enable entrepreneurs to employ capital goods in efforts to maintain or enhance a monetized income stream. However,

neglect seems to be an inherent part of governmental provision of the facilities currently viewed as part of public infrastructure. No focused and coordinated plan is possible in the case of public-infrastructure maintenance viewed as a comprehensive whole. The absence of an integrated income stream makes capital calculation impossible, and therefore neglect is an intrinsic feature of public provision.

Neglect of public infrastructure is also a likely consequence of legislators and executive bureaucrats' longer-term career strategies. These career strategies are a form of metaphorical capital in which self-serving acts of capital maintenance may logically result in infrastructure neglect. Political actors find themselves employing and managing the resources (metaphorical capital goods) at their disposal in pursuit of goals in which infrastructure maintenance may be, at best, only an ancillary concern. In other words, they will strongly support public-infrastructure maintenance only if doing so enhances their longer-term career ambitions.

It is commonly assumed that the government must provide public-infrastructure facilities to assure the provision of services that would otherwise be unavailable to the public. In this light, governmental provision of infrastructure is viewed as critical in providing public goods and thereby correcting a "market failure." Nonetheless, capital concepts highlight a virtually certain "government failure" in the maintenance of these facilities. The presumptive responsibility for infrastructure maintenance cannot be justified on the basis of a public-good rationale. Legitimate capital concepts suggest that ownership and maintenance of infrastructure facilities should never be placed within the government's scope of responsibility.

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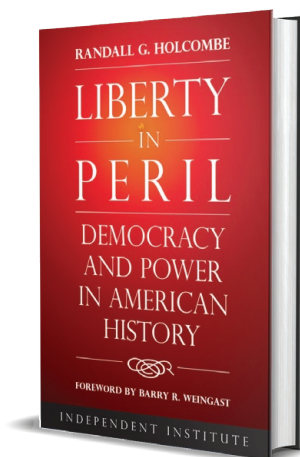
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