Caring for the Health Commons:
What It Is and Who's Responsible for It

Michael D. McGinnis, Ph.D.

Professor, Political Science, & Senior Research Fellow, Ostrom Workshop, Indiana University,
Visiting Faculty, Dartmouth Center for Health Care Delivery Science & Dartmouth Institute for Health Policy and Clinical Practice
Core Faculty, ReThink Health, The Fanie E. Rippel Foundation
mcginnis@indiana.edu

PRELIMINARY DRAFT version 3b – NOT FOR QUOTATION – April 13, 2013

ABSTRACT

This paper investigates the potential relevance to health care reform of the Nobel Prize-winning research of Elinor Ostrom on community-based management of natural resource commons. Two related interpretations of the concept of a "health commons" are considered, the first (a micro-commons) consisting of specific programs of quality improvement or health promotion, and the second encompassing the entire system of physical, financial, human, and social resources relevant to the delivery of health care in a region. The proliferation of micro-commons has deepened the fragmentation of health care delivery systems, and rising costs of health care threaten the long-term sustainability of this mode of delivery. Cross-stakeholder collaborations can serve as "stewards" of either of these health commons, under conditions analogous to the Design Principles identified by Ostrom. Examples from the case of Grand Junction, Colorado, are used to illustrate the relevance of these principles to shared stewardship of a regional health commons. The paper concludes with a set of questions that can help assess a community's ability to more effectively manage their own system of health care delivery.

PRELIMINARY DRAFT – NOT FOR QUOTATION

Comments welcomed – mcginnis@indiana.edu

Caring for the Health Commons: What It Is and Who's Responsible for It

1. Overview of Argument

The U.S. health care system is deeply fragmented, along multiple dimensions. Private insurance and social programs divide the population into segments with grossly unequal levels of protection, health care professionals are distributed among an ever-growing number of specializations with distinctive professional cultures, and research has documented substantial regional variation in the utilization, quality, and cost of health care, access to that care, and public health outcomes (Gawande 2009, Elhauge 2010, Radley et al. 2012).

In this paper I argue that this pervasive fragmentation may actually provide a solid foundation upon which transformational change can be built. The source of my optimism is the realization that much of this fragmentation originated from the endless creativity of health care professionals, who continue to devise new forms of medical treatment as well as innovative programs to improve the quality of care or campaigns to promote healthier behavior. All of these programs require the coordinated efforts of participants with diverse skills, who share a common interest in resolving some specific problem.

Although most do not realize it, participants in these programs are learning how to manage **common property**, that is, resources which are made jointly available to a specific group of individuals, each of whom has only limited rights to the use of that resource, since many consumption and allocation decisions must be made by the group as a whole. Each program or campaign brings together individuals and organizations with access to different skills and resources in order to design, fund, implement, maintain, evaluate, and improve a plan of coordinated action intended to solve a particular problem or to realize a shared aspiration. Thus, each program is jointly owned and operated by the providers participating in that program.

We use the term **stakeholder** to encompass all individuals or organizations that have a direct or indirect effect on the way medical care is delivered or experienced. Among the most important stakeholder groups are (1) physicians and other health care professionals, (2) administrators of hospitals and other health care facilities, (3) commercial insurance companies and other types of health plan insurers, (4) employers in healthcare and other sectors, (5) public officials from local, state, and national agencies, (6) professional associations, (7) community service organizations, and (8) individual citizens. The distinctions needed to be made for several of these categories demonstrates the overwhelming complexity of the actors involved in modern health care, but, for these general distinctions are widely used by health policy analysts.

The resources that constitute the micro-commons of a health care program are, in effect, the common property of the stakeholder organizations involved in the operation and regulation of that program. This means that many stakeholders are already deeply familiar with the practical dilemmas of collective action and common property, even though they may yet realize this connection. It is this widely shared experience that holds out the promise that at least some of these same individuals can learn to act as stewards of their local, or regional, system of health care delivery. The Merriam-Webster online dictionary defines **stewardship** as "the conducting, supervising, or managing of something; especially:

the careful and responsible management of something entrusted to one's care." They use stewardship of natural resources as a clarifying example, and one that is directly relevant for the purposes of this analysis. With respect to resource management, stewardship is an inter-related set of role expectations and responsibilities assigned to an individual or group, who agree to undertake prudent management of a resource so as to make sure that it remains in workable order and can continue to contribute towards achievement of the goals stipulated by the original owners of those resources.

Presumably, the existing system of health care was built to improve the health of citizens needing these services. In practice, however, the system often operates in ways that undermine this basic goal. It is widely recognized that the U.S. has the most technologically advanced and expensive system of health care in the world, and yet the health outcomes of its citizens are, at best, mediocre. This incongruity demonstrates the absence of effective stewardship of the health care system as a whole.

Here is where research on regional variation holds out promise for improvement. As demonstrated by extensive research based on data collected in the Dartmouth Atlas (http://www.dartmouthatlas.org/), some communities combine a higher than average quality of health care with lower than average costs for that care. Anecdotal evidence suggests that, in at least some of these regions, health care executives and community leaders meet together on a regular basis to share ideas and concerns, and to coordinate their efforts, even if only incompletely or on an informal basis. To me, this looks like stewardship.

The research project summarized in this paper was inspired by the idea that this minimal form of stewardship deserved to be more fully recognized, and its sources better understood, in the hope that this practice of regional stewardship of health care resources could spread to other regions.

Following this line of argument is possible only because of recent advances in the study of common property, common resources, and the commons (Ostrom 1990, 2009b,c). Generally speaking, a **commons** is any resource to which members of some group share access. Typical examples include common grazing land, lakes, irrigation systems, or forests. Individuals may extract resources from a commons for their own private use, but if too many people extract too much in too short a period of time, the commons may be degraded or destroyed. This "**tragedy of the commons**" (Hardin 1968) is especially likely if it remains an "open access" commons, which means that anyone can draw on these resources. This tragic outcome can be avoided only if someone takes responsibility for insuring the replenishment or maintenance of that resource. The question is who will pay the costs for doing so?

Hardin concluded that there were only two possible answers: either (1) the commons should be managed by some central authority assigned the task of acting as its steward, or (2) the commons should be divided into parcels of private property, since private owners could reasonably be expected to look after their own property. In 2009, my close colleague and dear friend Elinor Ostrom was awarded the Nobel Memorial Prize in Economic Sciences for demonstrating the relevance of a third answer to this question (see Ostrom 2009c).

In *Governing the Commons* (1990) and many other publications, Ostrom drew upon examples from countries throughout the world to demonstrate how local communities dependent on continued access to natural resources can, in some circumstances, work together to craft, monitor, enforce, and revise rules limiting their own behavior, and thereby manage to keep those resources available for long periods of time. These rules specified how many and how much resources can be extracted, and when,

as well as requiring contributions to collective efforts to maintain access to those resources. In effect, by transforming the commons into common property, a group could act as their own stewards.

From her careful observation of the many ways in which diverse efforts succeeded or failed, Ostrom identified eight characteristics of the ways in which the members of a group worked together which made sustainability a more likely outcome. **Sustainability** has become a highly valued normative goal, especially for those concerned with the conservation and stewardship of natural resources. These eight "**design principles**" specify conditions under which users can act as their own stewards of natural resources. As will be detailed below, a few health care leaders began to wonder whether these same principles might prove relevant in their own areas of expertise.

In the area of health care in the United States, sustainability concerns are usually expressed through doubts that recent trends towards ever-increasing levels of health care spending, which may, at some point, become so high as to undermine future economic growth. For me, the most effective interpretation came in Donald Berwick's plenary address to IHI (Institute for Healthcare Improvement http://www.ihi.org), which was delivered on the same day that Ostrom delivered her Nobel address in Stockholm. Berwick (2009) stressed his deep concern that the ever-increasing proportion of the U.S. economy that is being devoted to health care would have strongly negative effects on other sectors of the economy and public services, especially education. He concluded that this was by no means a sustainable process. After referring to regional variation in costs and utilization, Berwick suggested that leaders in those regions which experience higher than average quality of care for lower than average cost must be doing something right, and that Ostrom's design principles might help us understand the reasons for their success.

Although the basic analogy is compelling, more detailed investigation was needed to make this more than a rhetorical device. I have found it important to differentiate between two scales of commons in health care, each of which requires a different interpretation, and slightly different extensions, of Ostrom's original design principles. At one level are **micro-commons**, that is, the specific programs for treatment, quality improvement or health promotion that were mentioned above. In the health care literature, a more familiar term for systems of treatment would be **clinical micro-systems** (Nelson et al., 2007, 2008), with quality improvement programs typically focused on making specific improvements to these clinical processes, in order to incorporate more current understandings of best practices. I intend the term micro-commons to also include the many campaigns for promotion of individual and population health that play such a prominent role in the field of public health.

But Berwick's analysis was focused at the level of a region as a whole. He encouraged his listeners to think about the regional health care system itself as a kind of commons, one that has been managed in very different ways, and with very different results, in different parts of our diverse country. This idea of a regional scale **health commons** (encompassing all of the physical, financial, human, and social capital resources relevant to the delivery of health care and/or the promotion of population health in a geographic region) is a much more abstract concept than a micro-commons of specific collaborative projects. In this paper I conclude that the design principles identified by Ostrom fit conditions of a micro-commons directly, albeit some minor modifications, but that more extensive modification of the principles is needed to accomplish stewardship at a regional level.

This overview has introduced the concepts of common property in the health care context and traces the origins of this particular research project and why we draw upon the findings of researchers who

have focused on natural resource commons. Sections 2 through 4 first summarize basic concepts of commons theory and then identify the analogues to those aspects in the context of (1) specific health-related programs and (2) regional systems of health care delivery. Sections 5 through 7 retrace this same path, this time focused on the first explaining the meaning of the design principles identified by Ostrom as being critical to the successful management of natural resource commons over long periods of time, and then making specific connections to factors of manifest importance in health care micro-systems and in regional health care delivery systems, respectively.

After this long process of conceptual development, we move in section 8 to examples that help demonstrate the practical usefulness of this exercise. We use **Grand Junction, Colorado**, as an exemplar of shared stewardship of a health commons, since it has been recognized as a national leader in the delivery of high-quality health care at unusually low costs over the last few decades (see Berwick 2009, Bodenheimer and West 2010, Nicols et al. 2009, Okie 2010, Thorton et al. 2010). Section 9 looks beyond the details of Grand Junction to suggest a broadly applicable two-step strategy of (1) making sure that critical micro-commons are financially viable and (2) filling in remaining gaps to build a more sustainable system for the region as a whole.

Section 10 concludes this paper by considering the general lessons for this analytical exercise, specifically by outlining a general path forward and by articulating a normative vision of more effective, cheaper, and more just system of health care delivery in the United States, a system that, while still being peppered with diverse forms of collective action at many levels of aggregation, fits together in a more coherent manner, and has generally better consequences in terms of achieving better health outcomes and higher quality care at a more sustainable level of costs.

2. A Primer on Commons Theory

A commons can consist of one or both of two kinds of goods: (1) **public goods**, for which one person's enjoyment of that good does not preclude others from also enjoying it, or (2) **common pool resources** (**CPR**), for which consumption by one makes that particular resource unit unavailable to others. The scenic view of an open meadow, for example, is freely open to all (unless too many tourists try to observe it simultaneously), but once some of the grass in that meadow has been consumed by a cow belonging to one herder, those same blades of grass are no longer available for cows owned by other herders. The latter type of goods was the focus on Hardin's concern about a tragedy of the commons, for if no one acts upon an incentive to protect the health of the resource pool as a whole, then each will try to grab as many units of the resource for themselves as they can, while they can.

Commons occur in many different forms, and are familiar to people from all cultures. Common pool resource is a technical term for something that happens every day, when fish are caught, firewood collected, or farmers draw upon an irrigation system to water their crops. Behind this mundane façade, however, lies a subtle dilemma. When a particular resource unit (say, a fish caught in a lake) is extracted from a pool of resources (namely, the population of fish swimming in that lake), that fish becomes a unit of private property, no longer part of the commonly available pool of resources from which it was drawn. In this way, the concept of a CPR connects public and private goods in a uniquely intimate way.

Despite Hardin's dire prediction that such communities were doomed to suffer a "tragedy of the commons," Ostrom demonstrated that conditions found in many communities made it possible for them to work together and avoid a tragic fate. Specifically, these communities transformed a common

pool resource into **common property**, that is, an institutional arrangement though which a specific group of individuals shares the responsibility for jointly consuming and/or managing shared resources. The design principles she identified (and which are detailed below) set conditions on the ways in which this shared consumption/management process takes place.

To explore the relevance of drawing an analogy between resource commons and health care resources, we first need to specify the meaning of a few technical terms and phrases. Table 1 shows how these resource-related terms can best be interpreted in the contexts of the two levels of health commons under investigation in this paper.

Two fundamental processes need to be distinguished: **appropriation** (or extraction of a resource unit) and **provision** (that is, the replenishment of the resource or the construction and maintenance of infrastructure needed for the extraction process). For many cases studies by Ostrom, appropriators and providers are the same actors, typically called users, but this need not be the case. Also, for some cases the resource pool replenishes itself automatically, as is the case for fisheries that are not being over-fished, while others are constructed by human action and must be maintained, as is the case for an irrigation system.

If a commons remains open to all, there are, in effect, no rules limiting the use of that resource. But if that resource is owned as private, common, or public property, then rules may restrict many aspects of this process, limiting time, place, quantity, and technology of resource extraction, and requiring contributions to replenishment or maintenance efforts. These rules may be written by the users themselves or by more official authorities, or by a combination of both.

If the resource is critical to a community's survival, then sustainability becomes an overriding concern. Limits on extraction and encouragement of sufficient provision activities can help make a resource base sustainable, as well as contributing towards other collective goals.

It is the potential relevance of *common property* to health care delivery, and not the existence of a *commons* per se, that is the foundation stone for this extension of commons theory to the highly technical area of modern health care. The next two sections draw out the specific meanings of these terms in these different contexts.

3. Health Care Programs as Micro-Commons

The second column in Table 1 summarizes the ways in which each of the terms or processes introduced in the preceding section can be connected to its appropriate analogue in a program of clinical care or quality improvement or a campaign for health promotion.

The program itself constitutes the relevant pool of resources available to potential beneficiaries, who extract resources from that pool when they receive its benefits. In other words, an episode of care serves as the resource unit that a beneficiary appropriates from the general pool of available resources or services. In this case the resource pool has been artificially constructed, and is maintained, by the efforts of professionals (known in the health area, conveniently, as providers).

This clear distinction between providers and beneficiaries is an important departure from the norm in commons theory. In that realm it is at least left as a possibility that the individuals directly engaged in extraction or appropriation activities may also be intimately involved in such other tasks as provision or rule-making. Although it is well-known that an individual patient's own level of engagement with his or her clinical care can be an important factor in health outcomes, the distinction between patient and provider remains central to applications to this policy area.

Typically, participating providers are deeply involved in rule-making, having signed contracts or made commitments in some other form, to deliver their services to the program, under specified conditions. The program definition will also restrict the purposes for which these services can be delivered, and set criteria on those who are eligible to receive these benefits. Most programs are, in addition, subject to of regulation by local, state, and national authorities, as well as private or voluntary organizations that certify a program's quality.

Programs may receive financing from participating organizations or from public, professional, or philanthropic agencies, which will, typically, impose additional restrictions on the program in terms of what services their funds can and cannot support, and who can benefit from these services. Financial viability seems the most logical interpretation of the concept of sustainability in this setting. As we will see below, if a program remains dependent on funding from external sources, its long-term sustainability remain in doubt.

The services delivered to any one beneficiary is best be conceptualized as a private good, and the program as a whole may contribute to the public welfare, but, and this is the critical point of departure for our analysis, the resources that define the program constitute a form of common property. Participating providers (and funders) jointly develop, operate, and maintain the necessary resources, and make decisions regarding all of these activities according to collective decision rules, whether these rules are stated formally or followed in a more informal manner. As noted in Table 1, any contracts or other agreements between local stakeholders are constrained by regulations enacted by national, state, and local public authorities. In the case of clinical care or quality improvements, the Joint Commission is a private entity whose certification procedures have been integrated into health care procedures throughout the system.

It is worth pausing to explain that ownership, whether private or common, does not necessarily include the right of alienation, that is, the right to sell, exchange, or otherwise transfer ownership rights to a new owner. Even for many forms of private property it is not possible for the owner to sell or transfer all of the rights to the use of that property. Deed to a parcel of land, for example, may convey easement rights to other citizens, and these rights cannot easily be abrogated by any new owner.

Before moving to the interpretations of these terms better suited to an examination of a regional health care delivery system as a whole, it is worth pausing to consider what happens if a program is successful. Each successful program will do one or more of the following:
1. Save money for providers and/or beneficiaries;
2. Improve health of the beneficiaries;
3. Bring satisfaction to providers (i.e., fulfill interests and/or satisfy normative aspirations).

Since each program will require time, resources, and effort to keep it running, those running the program must pay careful attention to insuring that sufficient time, effort, and resources are allocated

to maintenance or continued investment. Those enjoying any of these benefits given above should be willing to contribute to maintenance efforts, but that incentive is going to be effective only if they have a reasonable expectation that they will continue to enjoy these benefits. This raises a critical question: How should any savings generated by a program be allocated (among the providers) or invested (in the same or in related programs)? We will return to this issue below.

4. A Regional System as a Health Commons

Seeing, as did Berwick, the entire health care delivery system in a region as a commons is a bit more challenging, and in my research I have considered and rejected several alternative modes of justification for this analogy. It proved remarkably easy to get caught up in efforts to define which aspects of a health care delivery system are best seen as private or public goods, and which best suit the definition of a common pool resource (as discussed above). This kind of exercise may help us understand particular types of health-related goods and services, but it doesn't address the central question of how we should understand the system as a whole.

For me the critical insight came when I realized that Ostrom's research was, at its core, not about CPRs per se, but rather about *common property* as an institutional response to the challenges inherent in complex combinations of private and public interest. Common pool resources happen to be an important example of that general class of phenomena, but many other mixtures of private and public interest are found in all areas of public policy. Ostrom's research happened to be focused on particular examples of natural or constructed resources that fit the CPR definition, but her findings were at least potentially relevant for situations in which other kinds of goods are being managed as a form of common property. So, the question at hand is this: who owns a region's health care delivery system? Does it even make sense to ask such a question?

Many of the resources relevant to health care are privately owned, including the professional skills of physicians, nurses, and all other health care professions. Hospitals, clinics, and other facilities may be owned by private corporations, by religious or secular based nonprofits, or by public agencies. The micro-commons identified above are, in effect, instances of common property, and their owners come from a wide array of organizational arrangements, some formalized but many left imprecisely defined.

For micro-commons, an episode of care is the natural analogue to a resource unit extracted from the common pool, interpreted as the services that can be delivered through that program, given the resources that have been contributed by participating providers. Moving to the macro-level of a regional health commons, the pool of resources should be expanded to incorporate all resources in that region that are potentially relevant for any form of health care, as well as resources that shape the overall health of the members of that community (see the right hand column in Table 1). This is an expansive concept, one that is hard to get one's head around.

We define a **_health commons_** as the entire supply of financial, physical, human, and social resources available for use in the delivery of health care (or medical services) to members of a specific group of individuals as well as all resources available for health promotion campaigns. Unlike a simple commons, however, these resources are rarely available equally to all members of the relevant group. Instead, different aspects of the relevant resources (in terms of specific forms of financial, physical, human or social capital) are owned or their use managed by organizations or individuals, many of whom are

primarily interested in pursuing their own personal goals. (Even for natural resources held as common property, the rules under which users must act may assign differential degrees of access to different individuals – common property does not require equal access by all members but rather that all authorized users are subject to a common set of rules and responsibilities.)

In earlier papers I disaggregated this total pool or resources into separate categories of physical, financial, human, and social capital, but that distinction did not prove very productive. After all, any of the micro-commons programs described above combines aspects of all four types of capital into a single program. Although distinctions among preventive, primary, acute, chronic, and palliative care are useful for some analytical purposes, in this case it did not seem promising to classify all existing programs into distinct types of care.

Eventually, I settled on treating the resource unit in a regional health commons as the resources devoted to care for some definable segment of the population. In this formulation, resources devoted to the Medicare population, for example, would not be available for use by those in other segments of the population. This type of distinction is common for analyses of the U.S. health care system, given that one's form of insurance coverage often limits the types of care one may receive or the types of providers willing to provide that care.

The analogue to the providers participating in a specific program is, however, a bit more problematic. It is not very useful to treat the entire population of health professionals in a given region as the provider group. Analysis is much more tractable if some sort of management group represents the professions as a whole. For the purposes of this paper, we consider such a group to be a "**stewardship team**," because a group which asserts its responsibility for overseeing the health commons as a whole has at least the potential of acting in a way that would effectively steward those resources, including helping make them available for later generations.

Few regions have a stewardship team in place, but that is not a disqualification in terms of commons theory. Many real-world commons lack effective stewardship, which is why Hardin's tragedy of the commons resonates so well with so many readers. After all, some commons do end up being destroyed.

It is important to note that, in any community, the resources of a health commons are already being allocated, whether or not a stewardship team is in place. The actions of all stakeholders interact in complex ways to allocate available resources to diverse uses. Financial resources are allocated whenever prices are set through negotiations among stakeholders, financial and physical resources whenever a patient undergoes a test recommended by a physician, human resources whenever employment decisions are made, and social capital is expended in any campaign to address obesity, smoking, or other public health concerns. Resource allocation takes the form of *stewardship* only when the people making these decisions take explicit account of their effects on the system as a whole, and make decisions intended to insure the continued availability of these resources.

In many cases, certain segments of the population do have a smaller group of individuals or organizations looking out for their interests. This group may or may not exhibit the full range of stewardship functions, but there is at least the potential for their doing so. For example, an employer providing health care benefits to its employees may be primarily concerned about minimizing the costs of that coverage, or minimizing losses to productivity arising from absenteeism, or may, in some circumstances, be motivated to care more broadly for the overall health of their employees.

Accountable Care Organizations (ACOs; see McClellan et al. 2010) and, earlier, Health Maintenance Organizations (HMOs) were set up to serve these functions for their enrollees, and our concept of a stewardship team essentially extends this bundling concept to the level of the community as a whole.

Yet the increasingly common ACO structure falls short of stewardship for the region as a whole. A steward responsible for one segment of the population may consider it appropriate to shift costs of their care onto some other segment of the population. Such behavior reproduces, albeit at a much higher level of abstraction, the self-serving behavior of a herder putting more and more cattle to graze on a common grassland, until the grassland can no longer sustain those cattle. Similarly, efforts to shift costs to other groups can, in the long run, end up making health care prohibitively expensive and maybe even bankrupting the economy.

So, what should a stewardship team focus on? For me the critical task is one of prioritization. What existing programs are most deserving of continued support or expansion, and which remaining gaps should receive the most concentrated efforts? This would require the members of the stewardship team to think beyond the confines of their own organizational mission, or beyond the groups for which they feel most responsible, in order to allocate regional resources in a more effective manner.

Yet, they must do so without giving state or national regulators any reason for concern about potential violations of anti-trust laws or other forms of restraint of trade. Being transparent and inclusive would help, but this is an intrinsically difficult tension, as we will see in more detail below.

For the systems-level analogue of resource sustainability or financial viability of a specific program, I recommend as a starting point the Triple Aim, the frequently articulated goal of achieving improved health outcomes and higher-quality care at lower per capita costs (Berwick et al., 2008). But for this purpose two additional concerns should be added. Community-level stewardship will require serious consideration of equity issues, as well as concern about the state of the region's economic health. So I would add equity and productivity as goals in a more expansive Quintuple Aim, if you will.

In sum, I interpret **stewardship of a health commons** as making allocations of that region's physical, financial, human, and social resources in ways that can simultaneously work towards improved health for the population as a whole, higher quality health care, at an affordable level of cost, with equitable access to all segments of that community, and in ways that improve the region's economic productivity. A tall order, certainly, but very much in the spirit of Berwick's remarks.

5. Conditions for Sustainability in Natural Resource Commons

At this point we return to pick up the central thread of Elinor Ostrom's breakthrough research on natural resource commons. Her most influential contribution was the distilling of the details found in many, many cases down into a set of eight "design principles" that, in her reading of the cases, were all found, in one form or another, in successful cases of long-enduring management regimes. Conversely, one or more of these design requirements were missing in cases of failed regimes. She did not claim that the people involved had consciously intended to satisfy these conditions, but that instead this list should be taken as a tentative representation of the underlying causal structure which determined success or failure. This aspect of her work has proven to be especially influential, since these principles specify those conditions that facilitate sustainability of a commons that is being managed as common property.

Here is a summary of these eight **<u>Design Principles</u>** (based on Ostrom 1990 and Cox et al. 2010):

1. Boundaries (biophysical and social) are clearly defined.
2. Congruence between appropriation and provision rules (for fairness considerations) and fitness to local conditions (for practicality).
3. Collective choice processes enable most affected individuals to participate in making rules.
4. Monitors are accountable to appropriators (or are the appropriators themselves).
5. Graduated sanctions are applied to rule violators (in increasing levels of intensity).
6. Participants have easy access to low-cost local arenas to resolve conflicts.
7. Minimal recognition by "higher" authorities that appropriators have rights to self-organize and devise their own institutions.
8. Nested enterprises for appropriation, provision, rule-making, monitoring, enforcement, conflict resolution, financing, coordination, and evaluation.

Ostrom's principles apply not to the resource itself, but rather to the institutional arrangement through which that common resource is managed. Her research demonstrates that sustainable management of shared natural resources is most likely to be achieved if the members of the group "owning" that common property exhibit certain characteristics. The design principles state what is needed for a common property regime to be sustainable; natural resources that are owned in some other way may also be sustained over long periods of time, but these specific principles need not apply to those other forms of property.

Ostrom (1990, 2005) emphasized that the design principles fit together in a configural manner, and thus it may not be a simple matter of how many of them are satisfied, but rather of the extent to which the resolution of one requirement reinforces or undermines the resolution of other requirements. These principles can also be rearranged to summarize the type of configural situations to which they are most likely to apply, and it turns out to fit very closely the situation confronting a closely-knit community in a remote part of the world, with a relatively weak government presence, which is highly dependent on continued access to that resource.

In such situations, locally-understood boundaries between the resource pools used by neighboring groups emerge from a long process of competitive interactions among these groups, and these boundaries should reflect the prevailing balance of power between the respective communities. A minimal level of autonomy may be conveyed by default, especially if their areas are remote from major population centers or vibrant markets. Monitoring outcomes should be easy for those who remain close to the action, especially if they are highly motivated. Wide participation in collective decision-making should be common in close-knit communities, and social sanctions in such settings can be both powerful and finely nuanced. Traditional modes of dispute resolution tend to be especially effective in making sure that disputes are resolved in ways that reinforce community ties, in this way taking community values into account in resolving interpersonal disagreements. Indeed, long-lasting rules are more likely to be effective, as long as local conditions do not change radically, and to have distributional consequences that are well-known and generally accepted as fair. This latter constraint is especially likely to be efficacious when reciprocity proves critical for survival in a changing environment. Finally, nested enterprises will naturally emerge over time, as succeeding generations craft ways to deal with new problems.

Of course, things did not work out so easily in all cases, since collapses of common property arrangements have definitely occurred throughout history. But this interpretation does suggest two concerns of considerable relevance to this study of health commons.

In the first place, this litany of potential advantages can also be read as a long list of potential threats to the continued success of any one regime. If external circumstances change in a way that undermines one or more of these design principles, it becomes more likely that a system of common property management, even one that has remained in place for centuries, may no longer be able to survive, given these new and more overwhelming challenges. This can happen when a previously remote community becomes deeply embroiled in political disputes between global powers or begins to attract the attention of global corporations. Or the infusion of newly salient cleavages between ethnic or religious groups may poison a sense of community among diverse peoples who once lived together peacefully. Disease epidemics or out-migration can weaken the institutional memory of communities. Communities throughout the world face many such dangers.

A second concern arises when one tries to extend these design principles to the context of health care in the U.S., where, it is safe to say, none of these favorable conditions are likely to be in place. Thus, design principles that may have been easy to satisfy in resource settings may turn out to be deeply problematic in a health commons, at either the micro or macro levels.

Ostrom always considered her list of design principles to be a start for further investigation, and she would be saddened if this list were ever treated as the last word on the matter. (Ostrom passed away in June 2012.) Her students and colleagues have contributed to subsequent research projects which demonstrated that at least three of the conditions can each be split into two related principles (Cox et al., 2010). First, there is no reason to presume that group boundaries and resource boundaries are always equally clear or unclear, and so this is really two different principles. Plus, Ostrom admitted that the meaning of clarity must be interpreted generously, since some of the locally agreed upon boundaries on access to resources changes from season to season, or in response to changing weather conditions. I would extend this line of argument to assert that the clarify of boundaries condition is important primarily because it facilitates achievement of a shared understanding of the system as a whole, and it is this level of systems understanding that is the critical factor, not clear boundaries per se.

Second, rules that are congruent to local conditions in the biophysical environment need not have distributional consequences that seem fair in light of local values, nor vice versa. Third, monitoring need not be done by the users themselves, but can instead be done by others, provided those others are held responsible by the users for delivering useful and reasonably accurate information. Thus, there are at least two ways to satisfy this condition. Indeed, any of these design principles can be realized in many different forms in different circumstances, a source of dazzling institutional diversity that she explored in her other works (especially Ostrom 2005, and Poteete et al. 2010).

In this spirit, my efforts to extend the design principles from the setting of natural resource commons to other policy areas have convinced me that there were at least two other requisites that were left implicit in her analysis, since they were in place in essentially all of her cases. These two factors require that (1) key members of the group have long-time horizons and care about the long-term sustainability of the common property and (2) the group includes leaders who have a sufficient moral authority to serve as conveners of their process of collective deliberation. Both of these conditions are nearly automatic in many natural resource settings, but neither is easily satisfied in U.S. health care policy.

The first is a condition that could almost have been taken as a condition for selection of her cases, namely, that these communities were dependent on continued access to these resources. This dependence not only makes this a salient matter for group discussion, but it also provides an essential foundation for such discussion, in making it immediately obvious that all involved do share at least some interests in common. In more complicated settings the search for any basis of common values can be a daunting but critical preliminary to the task at hand.

I'm also convinced that Ostrom did not assign sufficient importance to the ready availability of legitimate leaders in her study communities. Again, effective leadership cannot always be assumed, and much effort must often be directed to the recruitment and training of leaders. This point was made dramatically by Gutiérrez et al. (2011), who applied the design principles to a larger set of fishery cases and concluded that several combinations of subsets of the design principles sufficed to result in sustainability, provided each of these cases were also characterized by the presence of good leadership. Looking back at Lin's successful cases, it seems that leaders tended to emerge quite naturally from these close-knit communities.

So, in the remaining sections of this paper, my list of design principles will have 10 items, the 8 items in Ostrom's original findings, augmented by the presence of respected leaders and a shared commitment to some long-term goal. This slightly expanded list of ten design principles works well, as it respects both the original design principles for common property in natural resources and gently reinterprets and slightly expands that list to fit the much different conditions of modern health care.

The presence of even all ten of these design principles does not guarantee that the corresponding regime will be sustainable. Natural and constructed resource stocks can be impacted by exogenous shocks of overwhelming magnitude, posing challenges that even a well-designed regime could not survive. Ideally, the regime would be robust enough to survive most shocks, but one can always imagine scenarios that would overwhelm even the best designed system.

Before moving on to the potential relevance of similar design principles in health care, I want to emphasize one very important aspect of Ostrom's research that is too often overlooked. Hers is not a feel-good world in which people of all kinds work together in happy unison, a utopian vision she often derided as everyone sitting around the campfire joyously singing "Kumbaya." Ostrom was trained as a political scientist, and she served as President of the American Political Science Association, and in her work she manifested the best of that profession's sensitivity to questions of power and inequity (McGinnis 2011). Individuals who are locked together in a common property arrangement naturally tend to tug at the boundaries of those relationships. They may realize that their shared rules are functional in the sense of keeping the resource in good condition and available for their children, but they also face incentives to cheat at the margins, to improve their own lot as much as they can, especially if they think they can get away with it. This is why monitoring and dispute resolution mechanisms play such critical roles in her analysis, and why she recognized the genius that lies behind the condition of graduated sanctions: initially rule-breakers receive the clear signal that their misbehavior has been observed, but they are given a second, third, and maybe more chances to redeem their ways before they face the ultimate sanction of being shunned by their own community. Yes, people care about the well-being of others around them, but they also hate being taken for a sucker, and having regular monitoring and graduated sanctions is an effective way to find a sustainable balance between the extremes of pure self-interest and being lost in the group.

Anyone familiar with common property knows that it is as often a source of conflict as of comfort, perhaps even more frequently when it concerns matters of supreme concern to the people involved. Ostrom's lifelong focus on such seemingly mundane topics as water, fish, and forests seemed peculiar to some of her political science colleagues, most of whom are obsessed with matters of such grave importance as wars, revolutions, elections and major political changes, but the subjects of her studies were of critical importance to the people most directly dependent on their continued availability. Given this importance, to those who built the systems of cooperation she studied, politics was never far from the surface, and the design principles manifest a practical political solution to a very political problem.

6. Sustainability in a Health Program Micro-Commons

There are many challenges to sustainable collective action in the form of health care or health promotion programs. Although better health may be of overriding importance to a patient in the midst of a medical crisis, the clinicians assisting that patient will have to draw upon the existing stock of programs. For the most part, analogues of the design principles will apply to the actions of providers.

Program boundaries may be well-defined in terms of eligibility conditions, but much confusion is likely to result if, as is typically the case, providers are simultaneously engaged in many programs and if a beneficiary qualifies for different kinds of assistance. Ironically, a long-term commitment may be difficult to maintain for a program that successfully manages to lower the magnitude of the problem it was originally designed to address.

The ways in which programs are implemented tend to undermine any prospect that the participants will grow into a sense of being on a single team. In many programs collaboration among professionals with different skill sets happens behind the scenes, whereas direct consultation at the point of service would be a better way to build a sense of teamwork. As for beneficiaries, they are often treated as passive recipients of treatment or other services, even though their active engagement is frequently required for long-term success.

For health care providers, new micro-commons programs can be very important for their future development, or they may be relatively minor stop gap measures taken to address a particular problem, take advantage of a fleeting funding opportunity, and/or a cheap opportunity to gain some good press coverage and an uptick in positive public relations. Some multi-stakeholder collaboratives are operated as separate organizations, and many fail to be well-integrated into the routine operations of any of the providers. Individuals who devote much of their time to making these cross-organizational programs succeed may find that their efforts are not as generously rewarded as those of colleagues more active in the core units of their organization. Nor are sanctions for not living up to promises of support likely to be very effective, not if that program remains a relatively low priority. Contracts signed at the beginning of a program's life are likely to be incomplete, and when disputes later arise it may prove easier to just shut that program down and begin another one.

If a program ends up being a virtual orphan, it is unlikely to receive the level of support, financial and otherwise, that it needs to truly meet the needs for which it was designed. Thus, it is often the case that the need for specialized programs greatly outstrips the potential demand for these services. After all, the program was designed to serve the interests of the participating providers and especially of those

primarily responsible for funding the project. Their interests are unlikely to be perfectly aligned with those in most dire need.

Another consequence of poor integration into existing organizational routines concerns the common absence of effective measurement. Especially rare are good measures of patient perceptions, although this bias seems to be changing.

The biggest challenge to the sustainability of a health micro-commons comes from the frequently observed situation where it is much easier to obtain external support for a new problem than to continue an existing one, even if that program has been successful. This dependence on external funding, and the dysfunctional pattern of program chasing that it can induce, is a powerful brake on any sense of ownership of a program by those parties directly involved in delivering it.

Despite this litany of woe, many quality improvement and health promotion programs remain in operation for long periods of time, so there must be some effective ways to overcome these obstacles to collective action in health care, and Table 2 illustrates many potential resolutions.

The single most important step towards making a program sustainable is finding a secure source of funding. This can be done by obtaining solid commitments from the provider organizations, or, if the program is going to generate savings, making a commitment to pour any savings back into the program. For this kind of savings reinvestment to work, however, the parties would have to have defined their expectations for how costs would have risen in the absence of the program. Even going through this kind of exercise, at the beginning of the program, would help start it off on the right foot, because it would require serious deliberation and data-sharing on the part of all parties. This kind of close interaction should increase the likelihood that parties would work closely in later implementation of the program, further deepening the ties between them.

Another important contributor to potential sustainability would be if the parties actively explored the potential for later expansion of the program by bringing in new partners. Having regular meetings where emerging problems are discussed and new ideas explored would, again, deepen the sense that this ongoing collaboration remains salient for all involved. Finally, having an identifiable leader or leaders can be critical for initial success, but continued dependence of these leaders may be a double-edged sword, once time comes for the need to transition to new leaders. An even more effective path would be to establish a stand-alone organization to manage this program.

In short, securing internal funding and using the program as an excuse for representatives from all involved stakeholders to meet regularly lie at the heart of enhancing prospects for sustainability of any single program. As shown in Table 2, these are exactly the effects that would be produced by the presence of the Design Principles, augmented and interpreted in this context, according to the argument developed above.

If such a process was in place in a given region, over time we would expect to see the establishment and operation of an increasing number of special programs, some under the auspices of separate organizations and others run on a more informal basis. New programs would be established to fill many of the gaps left in the system, as an increasingly complex network of micro-commons takes shape.

However, there is no reason to presume that a system of health care related programs built up in this exclusively bottom-up fashion would, in the end, result in an integrated delivery system capable of achieving high value results. Instead, we should expect to see duplication of effort and an overall absence of a coherent plan. This is where we need to make the move to the macro-level, to see if anyone is likely to bring to bear a broader perspective on this dynamic process of institutional redesign.

Coordination at this level would be needed to cope with the conflicts of interest among different stakeholders that are sure to arise. Even in the presence of effective coordination, we should expect to continue to see conflicts and disputes arise; the trick lies in finding ways to resolve them without undue damage to the underlying relationship among the parties. We now turn to these critical issues of health care governance at the regional level.

A brief digression is in order to clarify that governance is a process, whereas government refers to tangible organizations. There is no generally accepted definition for the term governance, which is used in many different ways by scholars and practitioners in diverse fields of study and practice. For our purposes, a phrase used in a report on transportation planning in emerging "mega-regions" in the continental U.S. is particularly useful. Ross (2011, 107) describes governance as the effort to "establish a set of rules and norms that defines practices, assigns roles and responsibilities, and guides interactions between organizations, in order to tackle collective problems." Elsewhere (McGinnis 2013), I define **governance** as the processes through which collective decisions are made, implemented, interpreted, and reformed for some group – processes that are shaped not only by formal government officials but also by private individuals, corporations, and a diverse array of professional associations, community-based organizations, and voluntary/non-profit/non-governmental organizations.

7. Sustainability and Stewardship in a Regional Health Commons

It may be worthwhile at this point to remind the reader of the nature of the coordination problem in play at the regional level. Collaborations among stakeholders will have generated a complex pattern of programs, in which participating providers take on the responsibility for overseeing the health care needs of defined segments of the population. As explained above, the proportion of the region's resources that are devoted to care for that population segment can be seen as having been extracted from the system as a whole, and what is needed is for somebody to looking at the system as a whole, to make explicit tradeoffs among desirable ends. Without this kind of leadership, one should expect a pattern of cost-shifting between population segments, and more dramatically, direct conflicts of interest between stakeholders. Who will act as stewards of the system as a whole?

Here the challenges to effective and sustainable stewardship are especially daunting. To begin with, the boundary of the relevant region is rarely clear. People tend to go to doctors close to where they live or work, but may also keep these connections if they move elsewhere in the region. Nor is it clear who is well-placed to offer up rules or guidelines for all the diverse stakeholders involved in health care. These professions are subject to both public and private sources of regulations or best practice guidelines, but what we have in mind here as targets are more finely-tuned sets of priorities and collective decisions.

Health care is an atypical policy area since it lacks an obvious center of authority. Public health officials are trained to think in community-wide terms, but they rarely have direct influence over the actual delivery of health care. Providers, on the other hand, tend to be focused more on achieving their own

corporate missions, and collaborations involving participants from different stakeholder groups can easily degenerate into recriminations. So an important first question is who is going to be the convener of any community level deliberations?

The health care sector is replete with misunderstandings and stereotypes of people in other professions. Even organizations in the same line of business may see themselves as having quite different missions, with the for-profit vs. nonprofit distinction being the most familiar. Regulators concerned with the enforcement of anti-trust laws grow suspicious whenever health care providers get together to talk, and members of the public have good reasons to suspect their motives, if they are even aware of back-channel communications among business leaders. Our experience is that participants in multi-stakeholder collaborations are quite skittish when they feel they might be skirting the boundaries of ant-trust laws, which makes them reluctant to engage in activities that are perfectly acceptable.

Another major challenge lies in the many difficulties associated with measurement and data-sharing. Each organization or system has its own internal accounting rules, and legal concerns with privacy further complicate data-sharing. But without good measures of the comparative effectiveness of different programs, any effort to prioritize them is unlikely to be well-grounded. Even worse, it is often difficult to know what any one program has accomplished. This is why, when ACOs are formed, they need to agree upon some specific measures of their expectations of future trends, should the ACO not be formed, so they can later calculate the approximate savings that can then be put to other uses (McClellan et al. 2010). Even a more informal mode of cross-stakeholder collaboration will have to make similar arrangements.

Ostrom's research demonstrates that the most difficult challenges begin only after agreements have been made and procedures put in place. For then the parties will need to decide, on their own, whether or not they are willing to abide by those rules, and their decision may depend on how likely they are to be observed if they choose otherwise, and what might happen to them if they are caught out. In small communities, social shaming turned out to be a powerful form of graduated sanctions, and to some extent the same may be available to corporate executives in a given region, especially in communities where elite business leaders tend to travel in relatively restricted social circles. Relying on formal sanctioning mechanisms is costly and tends to induce lingering resentment, and so social shaming may be the primary sanctioning mechanism available to aspiring stewards of regional health care systems. Fortunately, recent experience with corporate compliance with consumer-supported environmental programs suggests that this may, in many circumstances, be enough to make a significant difference.

As has been noted throughout this paper, it is going to be difficult for anyone to understand the complexity of a regional health care system in its entirety, especially a system in which the formation of innovative collaborative arrangements is strongly encouraged. My colleagues in ReThink Health Dynamics (http://rippelfoundation.org/rethink-health/dynamics/) have developed a systems dynamic model that can be fine-tuned with data on a specific region, and that can help community leaders develop a better understanding of how their system might react to alternative combinations of new programs. Even though their knowledge is going to remain incomplete, this may be enough for them to move forward, but only if they can agree to regularly monitor important aspects of how their system is changing over time.

In sum, many obstacles lie in the way of successful achievement of a sustainable system of shared stewardship of a regional health care commons: boundaries may be ambiguous, stakeholders diverse

and lacking in mutual understanding, driven by competitive pressures towards aggressive expansion rather than open deliberations, a lack of commonly shared data frameworks, little concern for how other stakeholders interpret their own actions, and the danger of generating suspicion from regulators and perhaps the public as a whole whenever they do start to work together.

On the plus side, facing so many challenges at once means that actions taken to resolve one of these concerns may, at the same time, address some of the other concerns as well. For example, enforcing sanctions in a graduated fashion can help build a sense of trust, on the part of the sanctioned party, that the others are not interested in leading them to ruin. This increase in trust can in turn make it easier to build the open habits of discussion needed if the group is to arrive at policy responses best able to address their most difficult challenges. Many response paths need to be pursued simultaneously, but judicious emphasis on those responses that have positive impacts in multiple areas can be especially effective. Or doubly ruinous, if failure to address one concern simply makes others more challenging to overcome.

8. Lessons from the Grand Junction Path to Regional Stewardship

Given this litany of daunting challenges, Berwick's vision takes on a new depth. He drew on specific examples of communities whose leaders have found a way to overcome each and every one of these challenges. He pointed specifically to Grand Junction, Colorado, as a place where an informal leadership team has, for several decades now, been engaged in effective stewardship of their local health care resources, and have been rewarded by building a system that delivers an unusually high quality of care to its community at an unusually low cost. He recommended that we learn from their experience, and I was fortunate to be able to follow his advice. In this section I summarize the key elements of their plan, and use this as a point of departure for consideration of the general principles that lay behind their record of success (For additional details, see especially Nichols et al. 2009; other important interpretations include Bodenheimer and West 2010, Okie 2010, Thorton et al. 2010).

My discussion proceeds in two steps. First, I discuss examples that show how leaders in Grand Junction were able to address all of the design principles in Ostrom's original list. Although this could not have been their conscious intention, it is enlightening to re-examine the historical record in light of these requirements for sustained collective action. Second, I step back to focus on the overall strategy that lay behind their long-term success. This strategy too may not have been consciously conceptualized as such, but this underlying strategy stands as the most compelling lesson from this analysis.

For the following details, I draw upon an earlier paper (McGinnis and Brink, 2012).

1. Boundaries: The Mesa County Professional Independent Physicians Association (**MCPIPA**) and the Rocky Mountain Health Plan (**RMHP**, known locally as Rocky) built a financially based commons that provides equal reimbursements for healthcare services regardless of the funding source (private insurance, commercial insurance and Medicare/Medicaid).

2. Autonomy: When the Federal Trade Commission and the Department of Justice was considering initiating an unfair trade action against MCPIPA, a local physician sought the assistance of the AMA, which helped convince the FTC to instead sign a consent decree that enabled MCPIPA to continue to operate as before.

3. Wide participation in decision-making was formalized (in a limited manner) with the establishment of the Mesa County Health Leadership Consortium (**MCHLC**) in 2010, with facilitative support from the Institute for Health Improvement. Members were drawn from RMHP, MCPIPA, both local hospitals, Mesa County Public Health, the hospice, the mental health facility, the health information exchange, and others. The group meets monthly to discuss issues and opportunities that affect Mesa County. Each member, regardless of the size of his or her respective organization, is allotted one vote.

4. Congruence: Collective agreements have been implemented in a flexible way that takes into account potentially inequitable effects. For example, when an effort was underway to establish a common system of electronic records, which proved critical to later collaborations, physicians near retirement were exempted from this requirement, since they would not have been able to achieve any financial return for their investment in an EMR system. Eventually, all active physicians were using this system.

5. Monitoring: Physicians in MCPIPA participate in a rigorous peer evaluation process with support from the Rocky Mountain Health Plan. Each physician receives a statement showing how their testing and treatment practices match up against other physicians in their practice area. MCPIPA also runs voluntary productivity improvement programs that focus on patients with diabetes, heart disease, asthma and other chronic illness. On a quarterly basis MCPIPA sends a check to those who participated, and doctors who do not participate are informed about the percentage of their peers who are participating, the results of the programs, and the amount of income they are forfeiting by not being involved.

6. Graduated Sanctioning: Our interviews included several examples of gentle forms of mentoring that encourage the adoption of locally-accepted forms of behavior, beginning with "taking someone out for coffee" to help bring their views and actions back in line and escalating to withholding patient referrals.

7. Dispute Resolution: MCHLC members use informal means to resolve disputes before they become big problems, by maintaining their long-standing practice of open communication between among all parties.

8. Nested Enterprises: Members of the MCHLC jointly supported the establishment of Marillac Clinic (for uninsured patients), Hilltop Community Center (which runs the long-standing B4 Babies & Beyond program for pre-natal care), and other separate enterprises to deal with specific issues. This increases the complexity of the system but also gets more people involved in the collective effort of resource stewardship.

Some commentators have discounted the general relevance of this accomplishment by concluding that the level of collaboration, or commons-like behavior, could only have occurred in a low population area that is geographically isolated from large urban areas. (This observation points to a deeper source for the strength of the long-term commitment to local community that, as argued above, remained implicit in Ostrom's analysis of relatively remote resource-dependent communities.) However, in our study of Grand Junction we have seen that, when needed, the community leaders reached outside of this boundary to call upon other organizations, including a national professional association, and state and national elected and appointed official to increase the level of recognition for the community's

autonomy. They have been especially fortunate in having a series of individual leaders able to bring leading members of the community together around joint actions.

In our research we have concluded that the most critical key to the success of Grand Junction lies not in its geographic isolation or its specific reimbursement schemes or anything to do with the details of its organizational structure. Instead, the critical factor is the way in which leaders interact with each other. In many settings, both formal and informal, they communicate with each other on a regular basis, and they do so in a way that builds mutual trust and respect. Leaders share many social ties outside of their professional careers, and these informal social networks are critical in sustaining a sense of community. Collectively they have taken ownership of their regional system of health care delivery, and defended their autonomy against threats from outside the region. And they have established regular procedures for sharing information and rewarding those physicians who perform best, according to the standards they have jointly set.

Since there is no reason to think that the Grand Junction experience could be replicated elsewhere, these specific connections may be of limited use to others. Nor is there a solid logical basis for the entire set of connections as a whole, since some conflate effects operating at the micro and macro level.

So, here is my current understanding of a path towards shared but informal stewardship of a regional health commons, a model that is best exemplified by Grand Junction. Like every other community, leaders from different stakeholder organizations worked to establish and operate targeted programs. Virtually every community already has examples of this type of common property, but that most of these programs are not sustainable. Too many quality improvement or health promotion projects remain highly dependent on some external source of funding. One of the striking regularities in the Grand Junction region is that a few especially important programs have been sustained over longer periods of time by arranging for other sources of funding, especially from within the community.

They did so by selecting a few critical targets (such as sufficiency of primary care providers, the B4 Babies & Beyond pre-natal care for all, a pool to guarantee providers equal reimbursement for patients from all insurance groups, plus increments to reward exceptional performance), and then establishing programs that are directed at those key goals. And the critical thing is that they keep coming up with new ways to fund those programs, rather than allowing themselves to be diverting to pursuing the flavor of the month programs sponsored by external funding agencies. In this way they took ownership of their key programs, and began to build them into a sustainable package.

Over a long period of time, a series of steps were taken that resulted, eventually, in a knitting together of these programs into a broader system of regional health care governance. Even today, members of the MCHLC continue to explore gaps that remain in what is seen as a national leader in quality and cost control. Recent initiatives have focused on enduring challenges of public health promotion. In this process, Jeff Kuhr, the county's chief public health official, has taken on a prominent leadership role.

I have been fortunate to have been able to sit in on some of these conversations, which I must say, as a political scientist, I have found to be operating at a high level of political sophistication. Without divulging any details, I can say that participants in these meetings openly share their concerns about the potential downside of seemingly attractive opportunities for external funding and carefully evaluate the potential effects of any proposed new program on the interests of local stakeholders, even if the "representative" of that organization happened to miss that particular meeting.

In summary, the Grand Junction leadership group has taken ownership not only of specific programs but also of the regional system as a whole, and over time built these programs into a sustainable but ever-changing package. In doing so, they have demonstrated, by example, that it is possible to engage in transformational change by incremental steps, provided those steps are made in a strategic way that contributes towards moving in the right direction.

The key step was self-identification of a team of leaders, and their ability to work effectively as a team. This required that they build and maintain a minimal level of trust in each other, and establish norms of open and frank discussions, making sure that all points of view are aired and that any fairness concerns are evaluated honestly. Their discussions focus on meaningful tasks that can only be accomplished through joint action. It's a system that works well, and shows no significant signs of stress.

9. Looking Beyond Grand Junction

Even with the regular monthly meetings of the MCHLC, their process of coordination remains very informal. Other paths towards shared stewardship of a regional health commons lead to more formally integrated systems, such as Kaiser Permanente (McCarthy and Mueller 2009) or Geisinger Health (McCarthy, Mueller, and Wrenn, 2009), in which key stakeholders are integrated into a single organizational structure. Other paths can come from the ground up, as is happening in South Carolina under guidance of RTH teams (http://rippelfoundation.org/rethink-health/action/regions/columbia-south-carolina/). Other regions remain stuck in less promising paths, especially when their local programs remain highly dependent on external sources of funding.

The potential variety of feasible paths, or governance pathways, is far too wide to cover in this paper. Even so, I am confident that Ostrom's research on the sources and benefits of institutional diversity provides an excellent platform for further exploration of these paths. Each successful case will succeed through the operation of a unique set of decision processes, but Ostrom's research on natural resource commons demonstrates that a set of general principles can be inferred from careful observation of diverse cases, to identify the critical requirements that must be satisfied, albeit in very different ways in diverse settings.

In our work with other communities we have found that success requires finding sponsors and a neutral convener with locally-recognized moral authority. These may be part of the current health care system, or outside of it. Nonprofit community service organizations may be obvious conveners, but the problem at hand is more of a problem of coordination among business leaders, and so maybe it would be better to turn to business leaders outside of the health care sector. Thus, major local employers are a promising source of regional leadership. Retired business or community leaders might be especially effective in playing this role, since they are more likely to have sufficient time to devote to this task.

For any system of shared stewardship to work, the interests of the participating organizations need to be aligned, to at least some extent, with the good of the region as a whole. There will remain plenty of scope for competing and even conflicting interests over specific issues, but there has to be at least a minimal level of willingness to seriously consider the collective consequences of decisions taken by any organization acting alone, and, as a consequence, a willingness to discuss important problems and decisions with other members of the consortium. Characteristics of participating organizations act as enabling factors, as do factors at the levels of individuals and the state and national context. But the

design principles per se are not directly relevant for factors at the level of individual leaders or specific organizations, or to the state or national context, since these principals are properly applied to instances of common property. Factors at the individual or at the state and national levels serve as enabling conditions that facilitate the right kind of cooperation among shared owners of common property.

Significant disputes will arise, and it is critical that resolutions are accomplished in a way that avoids leaving one or more parties feeling badly wronged or left out of the group. They should fully expect to experience conflicts and setbacks, and need to build a resilient process of collaboration that can weather these kinds of interruptions and reversals. As noted in previous sections, shared stewardship does not require a Disneyesque-level of sweetness and light, but its operation does require at least a minimal level of understanding and appreciation of other points of view.

Talking about cooperation is one thing, but actually pooling money together brings a whole new level of realism. One of the pillars of the ACO concept is that savings generated by innovative programs should be reinvested in order to continue these successful programs and, if possible, to finance other programs. For health care collaboratives to take this next step, they need to be able to arrive at some consensus on how savings from these programs are to be reallocated among the parties if needed, but ideally fully reinvested in the collective project. They need to develop procedures to collect relevant data on a routine basis, and to disseminate that data widely and transparently. They need to face the implications directly, but to also allow for some flexibility for their colleagues who face stringent constraints from other sources (such as leaders of local organizations that are also part of cross-regional conglomerates).

For examples of this concept in action, I direct the reader's attention to the Accountable Care Community (ACC) organizations being built in such places as Whatcom County, Washington (Whatcom Alliance for Health Advancement 2011-12), and Akron, Ohio (Austen BioInnovation Institute, 2012). This ACC concept extends the logic of an ACO to cover all members of a community, and as a consequence requires the participants to establish a governance structure with clear lines of authority. These new organizations will have the authority to set regional priorities, calculate savings, and reinvest these savings into new programs, including in the area of health promotion campaigns.

Cantor et al. (2013) briefly surveys some exciting new instruments for capturing the savings generated by innovative programs in health care or health promotion. In addition to ACOs and ACCs, they discuss health impact bonds (a market-based instrument), wellness trusts (funded by required taxes on local stakeholders), and new regulatory requirements that tax-exempt health care facilities direct much of their community benefit expenditures towards prevention and other health promotion activities. These are all examples of the endless creativity in the health care sector which continues to contribute to the constructive kind of fragmentation introduced in the very first paragraph of this paper.

One final observation about Grand Junction also takes us back to the beginning of my argument. The health care system centered on Grand Junction, Colorado, is still fragmented, but it seems to be the right kind and level of fragmentation. The center holds, because all parties have come to a common understanding of their shared context and are committed to sustaining channels for productive communication. This level of commitment cannot be accomplished by fiat but must instead emerge through a long process of constructive engagement.

A similar combination of continuing fragmentation and an effective level of coordination can be found in the area of clinical care. It is common for individual patients to see many different specialists in the

course of treatment for a single health problem. Having easy access to electronic health records can reduce the costs incurred when one specialist feels compelled to order a test that the patient has already received at another facility. However, there remains a more demanding challenge of helping coordinate the many caregivers dealing with any one patient. Thus, care coordination has become a standard refrain in quality improvement circles. Coordinated care is easier to arrange in the context of a medical home, that is, an organization of primary care providers and specialists that operate together as a clinical team. This kind of team-building does not entirely break down the barriers between the mindsets and cultures of different professions, but it should be able them to operate more effectively as a team.

Shared stewardship can be seen as an analogous goal, but operating at the level of the regional system of health care delivery. There is no need to require all members of a stewardship team to adopt exactly the same set of visionary goals or economic interests; all that is required is that they can at least understand each other's points of view, and find a way to work together to more effectively manage the region's resources in ways that serve the broader values and interests of the community as a whole. Here the analogue to EMRs lies in the routine gathering and dissemination of measures of the effectiveness of the many programs underway in that region, but especially those that have been assigned the highest priority by the regional stewardship team. This level of data and shared prioritization is a prerequisite to the kind of sustainable stewardship advocated here.

A regional stewardship team coordinates, at a very general level, all forms of health care delivered to all population segments of that community. Their efforts will have to be funded in some way, and capturing savings from previous programs seems the most effective way of doing that in a sustainable fashion. How they do so will differ across regions, with those in more formally integrated systems having access to a specially designated common fund, while those in other regions must rely on other stakeholders to invest in programs well-suited to the overall plan agreed upon by that team (given the requisite level of monitoring, sanctioning, and dispute resolution).

Stewardship is coordinated care writ large!

10. There are Many Ways Forward

The transformation we advocate falls short of a systems-level change to single-payer or more extensive forms of centralized management, but it is politically expedient to accept the reality of continued fragmentation in the U.S. health care system as a whole. Some government agencies may need to expand their roles and capabilities, but others may instead need to scale back. Opportunities for increased levels of individual choice and market completion also play essential roles, but not as an end in themselves. There is no way that the technical complexities and ethical subtleties of health care can ever be shaped to match the ideal form of a perfectly competitive market guided to a social optimum as if by the operation of an invisible hand.

In sum, we encourage both health care professionals and the public at large make a more concerted effort to understand the health care system as it is, to appreciate why it is so fragmented, and how this fragmentation can be turned to better purposes. This is precisely the lesson for democratic governance as a whole that Elinor Ostrom encouraged us to draw from her research, when she gave her Nobel Prize lecture (Ostrom 2009c).

Still another lesson can be drawn from Ostrom's argument that climate change is such a complex policy problem, involving as it does so many forms of negative and positive externalities operating at scales from individual households to the global level and all levels in between, that only a program of policies directed at all of these levels can, in the end, be an effective response (Ostrom 2009a). Similarly, any truly effective transformation of a health care system requires that programs be designed and operated at multiple levels of aggregation, so as to internalize the effects of negative externalities within more encompassing interests while also capturing positive economies of scale.

The way forward is a multi-faceted task, requiring that inter-related criteria be pursued simultaneously or along parallel tracks. The scope of these relevant dimensions is well-demarcated by the design principles themselves. As Ostrom (2009b) concludes, the design principles may be most useful as a guide to the types of questions that a group should ask itself as it embarks on a journey towards a conscious recognition that their future paths are inextricably intertwined.

As a guide to those seeking to realize the benefits of shared stewardship of their own regional health commons, here is a list of ten declarative statements organized around these same themes.

A Strategy for Shared Stewardship of a Health Commons

1. **Think Systemically. Identify leaders who share a deep understanding of the overall dynamics of their regional system, and who respect the defining values of the local community.**

2. **Align Plans to Community Values. Encourage local stakeholders to consider community-wide effects when setting their own corporate missions and policies.**

3. **Build Momentum. Establish a forum for regular meetings of officials from key stakeholder groups to discuss plans and concerns, and focus discussions on meaningful and interdependent tasks.**

4. **Find a Trusted Convener. Identify a widely respected individual, group, or organization to convene and sponsor these meetings.**

5. **Established Shared Priorities. Collectively assign the highest priority to those locally-based programs that can best contribute towards effective improvements in health or health care for the community as a whole, and arrange secure funding for these high-priority programs.**

6. **Recognize Inequities. Pay careful attention to any concerns that the benefits and costs of these high priority programs are distributed in an unbalanced or unfair way.**

7. **Gather and Share Information. Systematically collect data for high-priority programs and comparative performance measures, and share this information widely.**

8. **Hold Each Other Accountable. Establish common expectations about how violations of agreements will be sanctioned, and adjust the levels of sanctions so that stakeholders who act protectively are warned but not excluded from subsequent discussions.**

9. **Address Disputes Honestly. Resolve disputes locally, if at all possible, do so and in ways that respect the vital interests of all stakeholders and leave minimal recriminations.**

10. **Nurture Innovation. Endeavor to make sure that all individual and joint actions contribute to the sustainability of a multi-level ecosystem of effective innovations and continuous learning.**

These questions can help begin a process of self-assessment, focused on the ways in which local leaders from all stakeholder organizations interact with each other. Few communities, if any, will find themselves on the right track in all of these areas, and even those who are there now will remain in danger of backsliding as conditions change.

This analysis should give aspiring stewards of local health care resources a real sense of hope. After all, they have already established the kinds of common property systems that could, potentially, contribute towards the construction of a broader regional system of informal governance. All they need to learn is how to make each of these programs sustainable in the long run, and to connect them together (by filling in gaps in coverage of functions or population segments) in a more strategic manner focused on innovative programs with truly transformative potential.

Of course, it's not as simple as all that. This project is part of the broader program of ReThink Health (http://www.rethinkhealth.org/). We have developed a program of engagement with local leaders that can address all of these concerns. Of course, we are not alone in offering useful programs, and we work in collaboration with IHI and other organizations in specific programs. Our particular contributions highlight the following themes that, when operating in conjunction, can help community leadership teams build a solid foundation for shared stewardship:

1. Recruit leaders motivated to act as stewards for the community as a whole, build their leadership skills, and teach them how to engage more effectively with others;

2. Assure that the right people are in the room, and help them develop relationships based on shared values and that foster trust and collaboration;

3. Help leaders across the community understand the region as a system and develop informed, evidence based strategies for achieving their goals;

4. Mobilize others for campaigns that first build momentum by attacking concrete and manageable problems and later morph into broader more ambitious goals;

5. Assist in design of and support for strategies and actions that can lead to measurable change;

6. Help set priorities among alternative projects and find ways to capture and reinvest savings from initial successes to deepen and broaden the scope of transformation;

7. Help build a governance structure that suits local conditions and that seems legitimate to all concerned;

8. Establish and maintain a cross-regional learning community so ReThinkers can continue to learn from each other.

Much work remains to be done to nail down a list of the specific programs needed to fully realize the transformative potential inherent in Ostrom's design principles, as revised here to better fit the context of U.S. health care policy. My hope is that this vision of common property as a response to the need for better stewardship of a regional health commons can contribute towards this end.

WORKS CITED

Austen BioInnovation Institute in Akron, 2012. *Healthier By Design: Creating Accountable Care Communities*, *A Framework for Engagement and Sustainability*, Feb. 2012. http://www.abiakron.org/Data/Sites/1/pdf/accwhitepaper1211v5final.pdf

Berwick, Donald M. 2009. "Squirrel," Plenary Address, 21st IHI Annual National Forum on Quality Improvement in Health Care, Orlando, FL: December 8, 2009. http://www.scribd.com/doc/24191521/Plenary-Text-Final

Berwick, Donald M., Thomas W. Nolan and John Whittington. 2008. The Triple Aim: Care, Health, And Cost, *Health Affairs*, 27, no. 3 (2008): 759-769 doi: 10.1377/hlthaff.27.3.759

Bodenheimer, Thomas and David West. 2010. "Low-Cost Lessons from Grand Junction, Colorado," *New England J. of Medicine* Perspective, 363:1391-1393, October 7, 2010.

Cantor, Jeremy, Leslie Mikkelsen, Ben Simons, and Rob Waters. 2013. *How Can We Pay for a Healthy Population? Innovative New Ways to Redirect Funds to Community Prevention*. Prevention Institute. http://www.preventioninstitute.org/component/jlibrary/article/download/id-730/127.html

Cox, Michael, Gwen Arnold, and Sergio Villamayor Tomás. 2010. "A Review of Design Principles for Community-Based Natural Resource Management." *Ecology and Society* 15(4):38, http://www.ecologyandsociety.org/vol15/iss4/art38/ES-2010-3704.pdf ;

Elhauge, Einer, ed. 2010. *The Fragmentation of U.S. Health Care: Causes and Solutions*, Oxford University Press.

Gawande, Atul. 2009. "The Cost Conundrum," *The New Yorker* June 1, 2009 http://www.newyorker.com/reporting/2009/06/01/090601fa_fact_gawande?currentPage=all

Gutiérrez, N., R. Hilborn, and O. Defeo. 2011. Leadership, social capital and incentives promote successful fisheries. *Nature* 470:386–389.

Hardin, Garrett**.** 1968. "The Tragedy of the Commons." *Science*, 162(3859): 1243–48.

McCarthy , D., and K. Mueller, Kaiser Permanente: Bridging the Quality Divide with Integrated Practice, Group Accountability, and Health Information Technology, The Commonwealth Fund, June 2009.

McCarthy,D., K. Mueller, J. Wrenn, Geisinger Health System: Achieving the Potential of System Integration Through Innovation, Leadership, Measurement, and Incentives, The Commonwealth Fund, June 2009.

McClellan, Mark, Aaron N. McKethan, Julie L. Lewis, Joachim Roski and Elliott S. Fisher. 2010. "A National Strategy To Put Accountable Care Into Practice," *Health Affairs*, 29, 5:982-990, doi: 10.1377/hlthaff.2010.0194

McGinnis, Michael, ed. 1999. *Polycentricity and Local Public Economies*: *Readings from the Workshop in Political Theory and Policy Analysis*. Ann Arbor: Univ. of Michigan Press.

McGinnis, Michael D. 2011. "Elinor Ostrom: Politics as Problem-Solving in Polycentric Settings," in Donatella Campus, Gianfranco Pasquino, and Martin Bull, eds., *Maestri of Political Science,* volume 2, Colchester, UK: ECPR Press, pp. 137-158. Draft version at http://php.indiana.edu/~mcginnis/eoaspolsmaster.pdf

McGinnis, Michael D. 2013. "Updated Guide to IAD and the Language of the Ostrom Workshop: A Simplified Overview of a Complex Framework for the Analysis of Institutions and Their Development," http://php.indiana.edu/~mcginnis/iad_guide.pdf

McGinnis, Michael D., and Claudia A. Brink. 2012. "Shared Stewardship of a Health Commons: Examples and Opportunities from Grand Junction, Colorado," A White Paper Prepared for the Alliance of Community Health Plans, Working Paper W12-14, Ostrom Workshop, Indiana University, Bloomington.
http://php.indiana.edu/~mcginnis/healthcommons/HealthCommonsWhitePaper.pdf

Nelson, Eugene C.; Godfrey, Marjorie M.; Batalden, Paul B., editors. 2007. *Quality By Design: A Clinical Microsystems Approach*. Jossey-Bass.

Nelson, Eugene C.; Godfrey, Marjorie M.; Batalden, Paul B.; Berry, Scott A.; Bothe, Albert E.; McKinley, Karen E.; Melin, Craig N.; Muething, Stephen E.; Moore, L. Gordon; Wasson, John H.; Nolan, Thomas W. 2008. "Clinical Microsystems, Part 1. The Building Blocks of Health Systems," *Joint Commission Journal on Quality and Patient Safety*, Volume 34, Number 7, July 2008 , pp. 367-378.

Nichols, Len M., Micah Weinberg, Julie Barnes. 2009. *Grand Junction, Colorado: A Health Community That Works*. Washington, DC: New America Foundation, August 2009.
http://newamerica.net/files/GrandJunctionCOHealthCommunityWorks.pdf

Okie, Susan. 2010. "How the Stars Aligned to Make Grand Junction a Success," *Health Affairs* 29 (9): 1687-1688.

Ostrom, Elinor. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action.* New York: Cambridge University Press.

_____. 2005. *Understanding Institutional Diversity.* Princeton, NJ: Princeton University Press.

_____. 2009a. "A Polycentric Approach for Coping with Climate Change." Policy Research Working Paper No. 5095. DC: The World Bank. http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2009/10/26/000158349_20091026142624/Rendered/PDF/WPS5095.pdf

_____. 2009b. "Design Principles of Robust Property Rights Institutions: What Have We Learned?" In Property Rights and Land Policies, ed. Gregory K. Ingram and Yu-Hung Hong, 25–51. Cambridge,

MA: Lincoln Institute of Land Policy. http://www.lincolninst.edu/pubs/1576_Property-Rights-and-Land-Policies

_____. 2009c. Text, video, and presentation slides for Nobel Prize Lecture. http://www.nobelprize.org/nobel_prizes/economics/laureates/2009/ostrom-lecture.html

Poteete, Amy, Marco Janssen, and Elinor Ostrom. 2010. *Working Together: Collective Action, the Commons, and Multiple Methods in Practice.* Princeton, NJ: Princeton University Press.

Radley, D.C., S. K. H. How, A. K. Fryer, D. McCarthy, and C. Schoen, *Rising to the Challenge: Results from a Scorecard on Local Health Performance, 2012*, The Commonwealth Fund, March 2012.

Ross, Catherine L. 2011. *Megaregions: Literature Review of Organizational Structures and Finance of Multi-jurisdictional Initiatives and the Implications for Megaregion Transportation Planning in the U.S.*, Report submitted to U.S. Department of Transportation, October 2011. URL http://its.dot.gov/planning/publications/megaregions_report_2012/megaregions2012.pdf Accessed April 4, 2013.

Thorton, Marsha, Jane Brock, Jason Mitchell, and Joanne Lynn. 2010. "Grand Junction, Colorado: How a Community Drew On Its Values to Shape a Superior Health System," *Health Affairs* 29 (9): 1678-1686.

Whatcom Alliance for Health Advancement. 2011-2. *Transforming Health Care in Whatcom County*, Phase I Executive Report, September 2011 http://www.whatcomalliance.org/documents/transforming-health-care/reports/PhaseIExecutive_Report.pdf and Phase II Executive Report, November 2012 http://www.whatcomalliance.org/documents/transforming-health-care/reports/PhaseIIExecutive_Report.pdf

Table 1. Translation of Terms Used in Commons Theory to Health Contexts

Natural Resources	**Health Micro-Commons**	**Regional Health Commons**
CPR = Common Pool Resource (Example: population of fish)	Program (Health Promotion or Quality Improvement)	Overall stock of physical, financial, human, and social capital in region
Resource Unit (example: a fish once it has been caught)	Episode of care for an individual	Costs of care for individuals in an identifiable population segment
Appropriation (extraction of resource unit from resource pool)	Benefits received from program	Utilization, total health care costs
Actors: Appropriators and Providers may be from same group	Individuals appropriate & providers are stakeholders	Stewardship Team acting on behalf of population as a whole
Provision: replenish resource or construct and maintain infrastructure	Providers make contributions to program	Providers may establish an innovation fund, and agree to reinvest savings
Rules may restrict time, place, quantity, and technology of resource extraction	Rules define eligibility for beneficiaries	Rules may limit construction of new facilities that duplicate existing services
Provision Rules may require contributions to replenishment of resource or maintenance of infrastructure	Rules specify which providers are responsible for which services	Limitations on how parties can spend savings from programs, or what initiatives they should undertake
Rule-making activities by community or by user group	Contracts among providers to deliver services	Stewardship team sets priorities for program support and gaps that need filling.
Higher level public authorities may restrict ability of local users to set or enforce own rules	Regulations from local, state, and national authorities, and certification organizations	Anti-trust regulations and other restraints on cross-stakeholder collaboration
Tragedy of the Commons: degradation or destruction of the resource	Demand for the program's services overwhelms available supply	Rising health care costs reduce overall economic productivity
Goal of **Sustainability** (ensure future access to resource)	Financial viability (avoid dependence on grants); original problem is unlikely to be completely solved	Quintuple Aim: The Triple Aim (better health, high-quality care at lower costs) plus Equity and Productivity
Common property (joint ownership)	Jointly operated program	Stewardship of regional resources

Table 2. Design Principles Applied to Micro and Macro Level Health Commons

DPs	Specific Programs	Regional Stewardship
Clear Boundaries	Clarify effects of program on other programs in region, Encourage coordination among related programs.	Form a real team of diverse stakeholders; Recruit new partners whenever needed; Tolerate ambiguity.
Long-Term Horizon	Benchmark expectations set before program began, Calculate estimated savings from its operation.	Share high aspirations for transformative change; Prioritize specific and achievable goals to build momentum Track changes in community needs & capabilities.
Wide Participation	Encourage active collaboration among providers in program implementation; Encourage active participation by beneficiaries.	Establish and sustain norms of open discussion; Build and reinforce trust that discussions are confidential; Be transparent and inclusive.
Trusted Leaders	Recruit leaders with personal and professional reasons for wanting this program to continue to succeed.	Select conveners and sponsors with moral authority; Build public accountability.
Recognized Autonomy	Develop internal sources for funding; Obtain tangible buy-in from participating providers.	Secure internal funding for high-priority programs; Establish criteria for reinvestment of program savings.
Congruence	Recruit new supporters and participants; Build habits of information sharing.	Avoid threats to vulnerable stakeholders; Redress inequities in costs, access or care quality.
Responsible Monitoring	Build systematic data gathering into program implementation, from the very start of each program; Always include consumer-based measures.	Gather data systematically and share widely; Measure consumer perceptions in all program designs.
Graduated Sanctions	Encourage personal commitment to program goals; Set up friendly competition among work teams?	Hold parties accountable, but allow for resets and re-starts; Work around constraints on local stakeholders in multi-regional consolidated systems.
Dispute Resolution	Meet regularly to discuss emerging concerns.	Discuss fairness concerns openly and respectfully; Avoid lawsuits and politicization of disputes.
Nested Enterprises	Form work teams for distinct tasks, but share learning; Identify partners for extensions or related programs.	Focus attention on meaningful, interdependent tasks; Develop common understanding of system dynamics; Encourage neighborhood-initiated programs.