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# Formulating Quarantine Policies as a Wicked Problem

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## ABSTRACT

This paper explores how policies related to public health concerns, specifically quarantine, are enacted in the United States. Additionally, this paper discusses the complexity involved in the public policy process. Further, the concept of wicked problems, those problems where traditional management practices fail to result in solutions, are discussed. Understanding how individual stakeholders derive perceptions of risk is important in developing effective and efficient means of problem resolution. Key to this understanding is the role of how social organizations influence individual perceptions. Risk is an essential aspect of how problems become complex. When doubt exists as to the impact of particular actions, uncertainty arises that further complicates problem resolution. Uncertainty imposed by unresolved stakeholder concerns results in disagreement over the nature of problems and their solutions, and is a source for citizen resistance to proposed actions. A key contributor to complex problems results from multiple stakeholders with differing sets of perceptions and preferences.

## DEMOCRATIC DECISION-MAKING PRACTICES IN THE UNITED STATES

The word democracy is taken from the Greek words demos (meaning people) and kratia (meaning power).<sup>1</sup> The basic definition to this word is in the concept of government by the people, exercised either directly or through elected representatives.<sup>2</sup>

In the United States democratic practices were initially established as electoral representation of the public. Electoral representation is a form of aggregation of the public’s desires into a single issue perspective as determined by the presiding elected representative. The word aggregation means to gather into a mass, sum or whole.<sup>3</sup> The initial democratic practices in the United States then can be seen as aggregative democracy.

In contrast to aggregative systems, which employ an arbiter to filter preferences based on majority rule, collaborative systems engage in debate and consensus building of all stakeholders for each issue. This collaborative form of democratic practice is known as deliberative democracy. The meaning of the word deliberate is to discuss and examine issues through consultation of stakeholders in making decisions.<sup>4</sup>

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<sup>1</sup> *The Concise Oxford Dictionary of Politics*, Oxford University Press, Copyright © 1996, 2003.

<sup>2</sup> *The American Heritage® Dictionary of the English Language, Fourth Edition*, Houghton Mifflin Company, Copyright © 2007, 2000, Updated in 2007.

<sup>3</sup> *The American Heritage® Dictionary of the English Language, Fourth Edition*, Houghton Mifflin Company, Copyright © 2007, 2000, Updated in 2007.

<sup>4</sup> *The American Heritage® Dictionary of the English Language, Fourth Edition*, Houghton Mifflin Company, Copyright © 2007, 2000, Updated in 2007.

Current methods in United States public problem-solving involve decision-making actions accomplished by elected representatives after structured forms of public input. These structured forms of public input involve such things as elections, open hearings, or written public comment, which are largely adversarial in nature. These methods of public input only offer the opportunity for public comments in support or against specific actions, and provide the stakeholders with only an indirect say in the outcome as is common in aggregative democratic practices. In contrast, deliberative democratic methods (DDM) use collaboration to gain insight into all stakeholders' concerns. Through open, honest dialogue between and willingness of all participants, preferred alternatives are found. Stakeholders discover these alternatives by restructuring problems through sharing each others concerns and desired outcomes.

In the United States, as well as all western democratic societies, government institutions have been augmented by voluntary interest groups to address the diversity of public desires. Everyone has an opinion about how things should be accomplished. When people share a common objective or opinion, interest groups are formed as a means to achieve these objectives. Voluntary interest groups have formed to promote common interests. When individual issues are significant and of broad concern voluntary interest groups form easily. However, when concerns affect small numbers, as those in quarantine, there is little incentive for formal interest group organizations.

This article explores whether collaborative democratic systems, such as DDMs, are more efficient and effective means of decision-making and problem solving to resolve issues regarding quarantined individuals than aggregative democratic methods.

As part of this article a review of the literature on risk and problem-solving methods is performed. The relevant literature on social organizational, administrative, and risk theory were reviewed to identify how individuals perceive risk and methods of risk mitigation. This literature review is necessary to answer the questions of how do individuals form perceptions of risk; and what methods exist to address problems caused by perceptions of risk and uncertainty.

## **RISK AND UNCERTAINTY AS SOCIAL CONSTRUCTS**

Knight (1921) sharply discriminates the concepts of "risk, as referring to events subject to a known, or knowable, probability distribution and uncertainty, as referring to events for which it is not possible to specify numerical probabilities."<sup>5</sup> Institutional actors (i.e., industry and government) see problems from the perspective of risk mitigation strategies. Individuals see problems from the perspective of uncertainty if outcomes are unknown, and risk mitigation strategies when the individual has sufficient information.

Clarke and Short (1993) note that it is important to recognize that people derive meaning and a sense of community from institutional contexts and associations and that the area of social constructionism is relevant to the study of risk.<sup>6</sup> They further note that social

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<sup>5</sup> LeRoy, S. and L. Singell, 1987. Knight on Risk and Uncertainty, *Journal of Political Economy*, Vol. 25, No. 2, April 1987, p. 395.

<sup>6</sup> *Ibid*, Clarke and Short, pg. 385.

constructionism is an inherent element in risk perception.<sup>7</sup> Douglas (1983) provides support for this by noting that “humans act less as individuals and more as social beings who have internalized social pressures and delegated their decision-making process to institutions.”<sup>8</sup>

Douglas (1983) also notes that “risk should be seen as a joint product of knowledge about the future and consent about the most desired prospects,”<sup>9</sup> arguing that risk perception, as seen from the cultural perspective involves “the social environment, the selection principles, and perceiving subjects as all one system.”<sup>10</sup> Douglas’ assertion highlights the inherent subjectivity of the cultural perspective. Also, she provides insight into how these perceptions are comprised of a system which expressly incorporates the underlying social environment of individuals. Understanding the perceived “social environments” of individuals under differing conditions may assist in defining methods for developing risk mitigation strategies.

### **COMPONENTS LEADING TO COMMUNITY ACTIVISM AND RESISTANCE**

Another central aspect of this research is identification of the necessary components that must be present for citizens to engage in forms of community resistance. This includes developing an appreciation of the surrounding conditions associated with the issue to uncover what the underlying elements are that either foster or mitigate resistance. Such actions clearly involve developing an understanding of the associated industry and identification of the elements of desirability for services provided.

One such example is the issue of control when dealing with quarantine policies. These concerns arise over perceived attempts to manipulate or misrepresent information in order to enact quarantine policies. For example, during the 1990’s tuberculosis outbreak in New York City, more than 90% of those detained for treatment were non-white with greater than 60% of them homeless at the time of detention.<sup>11</sup> Although that study also found no discriminatory detention occurred, the listed percentages could increase the perception of government bias against vulnerable populations. Techniques for overcoming should include oversight as well as critically evaluating knowledge claims made by expert witnesses concerning risk levels associated with people who are infected or contaminated.

There appears to be growing concern over the impartiality of expert witnesses in accurately disclosing these risks, as well as the willingness of expert witnesses to withhold information, which may not be favorable for respective technological introduction. Even if these experts are truly impartial in reporting the risks associated with technological actions there may be an underlying difference in perception. Piller (1991) notes these differences in perception can be categorized as either technical for those who favor a scientific approach, or cultural for those who favor a more “personal”

<sup>7</sup> *Ibid*, Clarke and Short, pg. 395.

<sup>8</sup> Douglas, Mary and Aaron Wildavsky, 1983. *Risk and Culture*. Berkeley and Los Angeles, California: University of California Press. pg. 80.

<sup>9</sup> *Ibid*, Douglas and Wildavsky, pg. 4.

<sup>10</sup> *Ibid*, Douglas and Wildavsky, pg. 7.

<sup>11</sup> Gasner, M. R., K. L. Maw, G. E. Feldman, P. I. Fujiwara, and T. R., Frieden., 1993. The Use of Legal Action in New York City to Ensure Treatment of Tuberculosis, *New England Journal of Medicine*, 1993, (February) Vol. 328 p. 521-526.

approach. Each of these rationalities is based on different logical assumptions and criteria.<sup>12</sup>

Cultural rationalists see their opposites as unfeeling, counter-intuitive, and autocratic; limited to quantitative analysis; and usually serving the interests of those who control or profit from controversial technology. The cultural model of risk comes from the personal experiences and shared history of those who are subject to the perceived hazards.

By contrast with the cultural model, the technical model views the cultural approach as emotionally based and non-scientific. Technical rationalists estimate risks based on defined principles, scientific norms, logical consistency, and they use this “to fine-tune the regulatory apparatus ... technical rationalists may err on the side of caution”. But they use equal caution to avoid overestimating risks in ways that create obstacles to profitability. The technical model gives responsibility for controlling risk to corporate or government decision-makers.<sup>13</sup>

Differences in knowledge claims are supported by the findings of Phil Brown (1992) in his study of how experts conduct the process of epidemiological evaluations and environmental health risks. Brown posits that differences exist “between lay and professional group definitions of data quality, methods of analysis, traditionally accepted levels of measurement and statistical significance, and relations between scientific method and public policy”.<sup>14</sup> Brown (1992) further contends that these differences in perceptions have led to community activism.

While the above discussion of risk focused on the differences in knowledge claims, there also exists the potential for difference in attitudes, beliefs, or expectations that may be present. These differences are not tied to the underlying technical elements of a particular situation and may in fact simply be differences of opinion: how one individual or group perceives something is no less significant than those based on scientific knowledge claims. The important aspect is determining if the differences in either scientific knowledge claims or preferences results in some sort of action, in this case community level resistance.

The fact that there are differences between how lay persons and professionals view risk, or that there exists differences in preferences between individuals or groups, is not sufficient to explain why individuals form resistance to certain action and not others. To explore this further, Kenneth Bachrach and Alex Zautra (1985) analyzed how individuals coped with the threat of closing of a Hazardous Waste Facility. They note that individuals use two basic forms of coping techniques to respond to external conditions that are perceived as threats and exceed their respective resources; problem focused to actively address threats, and emotion focused to regulate internal emotional responses. Citing previous research they note that individuals who felt capable of doing something about a particular stressful situation employed problem-focused coping, whereas those individuals who felt they could do little to change a situation employed emotion-focused coping. They hypothesized that two components were required to allow individuals to feel that they were in control: self-efficacy, and sense of community. As hypothesized, greater community involvement was associated

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<sup>12</sup> Piller, C, 1991. *The Fail-Safe Society: Community Defiance and the end of American technological optimism*, Berkeley and Los Angeles, CA: University of California Press.

<sup>13</sup> *Ibid*, pg 181.

<sup>14</sup> Brown, Phil., 1992. Popular Epidemiology and Toxic Waste Contamination: Lay and Professional Ways of Knowing, *Journal of Health and Social Behavior*, 1992, Vol. 33 (September), pg 267-281.

with problem-focused coping and, increased self-efficacy and sense of community led indirectly to increases in community involvement.<sup>15</sup>

With respect to quarantine, in addition to medical reasons, quarantine also functions as a form of “police power,” allowing the government, at various levels, to take action upon an individual to benefit society. “Under section 361 of the Public Health Service Act, the US secretary of Health and Human Services is authorized to take measures to prevent the entry and spread of communicable diseases from foreign countries into the United States...” with the authority ultimately given to the CDC (42 Code of Federal Regulations parts 70 and 71). States also have such police power. “To control the spread of disease within their borders, states have laws to enforce the use of isolation and quarantine.” However, laws can vary from state-to-state, and breaking any quarantine orders, whether local, state or federal, could result in fines and/or imprisonment<sup>16</sup>.

Naturally, this poses a threat to the fundamental liberties that Americans typically enjoy – to have to be forcibly held against one’s own will and without having done any wrong that would merit such actions – and consequently creates a form of resistance. This is especially the case, if one considers that quarantine “can be and historically often has been used in discriminatory manner.”<sup>17</sup>

Such federal laws, originally drafted in the 19<sup>th</sup> century, are in need of change. Proposed regulations by the CDC would comply with current federal privacy laws, but the new rules don't address a patient's rights to appeal their case, said Boston University health-law professor George Annas. "It would be helpful to be more explicit about the rights of people who are isolated or quarantined," he said. "They should be very specific about how long you can hold someone and when they have a right to a lawyer, a hearing or a second opinion from an independent doctor." For now, Annas said, judges asked to rule about quarantines would probably resort to a more settled area of law for guidance: the mandates about involuntary commitment of the mentally ill.<sup>18</sup>

### **RISK AND SOCIAL CONSTRUCTIONISM AS MEANS TO IDENTIFY PROBLEMS**

Knowing that individuals act in response to perceived problems, when they hold sufficient feelings of self-efficacy and sense of community, only identifies when action may be possible. The issue of problem definition still remains. Here the concept of risk and social constructionism is provided as a means of how individuals identify problems. Lee Clarke and James Short (1993) argue that the social constructionist view rejects the notion of objective reality, asserting that there exists “fundamental ambiguity in social relations and meanings.”<sup>19</sup> Clarke and Short (1993) argue that a key component of social constructionism is the identification of who or what entity is doing the construction, providing examples that

<sup>15</sup> Bachrach, Kenneth M. and Alex. J. Zautra, 1985. Coping with a Community Stressor: The Threat of a Hazardous Waste Facility, *Journal of Health and Social Behavior*, Volume 26, Issue 2 (June, 1985), pages 127-141.

<sup>16</sup> *Legal Authorities for Isolation and Quarantine*, CDC.

<sup>17</sup> Parmet, Wendy E. Legal Power and Legal Rights – Isolation and Quarantine in the Case of Drug-Resistant Tuberculosis, *New England Journal of Medicine*, Volume 357 pg 433-435.

<sup>18</sup> Dotinga, Randy. Century-Old Quarantine Law Puts Patient Rights at Risk, wired.com.

indicate that this often is accomplished by organizational and institutional actors attempting to promote particular agendas.

Brion (1991) notes that there exists disproportionate stakes when dealing with policies between general members of the community and those subject to such policies, generating neighborhood unrest and collective identification. Brion (1991) contends that the population bearing the costs, such as an ill-defined potentially contaminated subgroup of the population, will result in it being more likely that the general population will mobilize in response to being unduly burdened and detained to benefit a broader, diffuse population. He suggests that such conflicts damage our ability to compromise in other social, environmental, and political problems.<sup>20</sup>

While this overview does not fully amplify all of the concerns, or issues, involved in local community activism, it does depict that resistance is clearly evident in the United States. Piller (1991) supports the notion that individuals' distrust of regulatory structures has been increasing as a result of concerns over differences in knowledge claims. This distrust is noted as the process of task differentiation and creation of specialists who claim superior knowledge evolves into the seeds for distrust when accretions are later found in error as a result of failures, or scandals. Individuals are left skeptical and potentially cynical of the claims made by experts (Piller).

The difficulty in determining the efficacy and sufficiency of specialist's claims adds a new level of complexity into social problem solving and contributes to the movement of these from "tame" to "wicked" problems. Further, these incidents raise concerns by individuals about the choices made by so called experts and the implications of these choices to their expectations of quality of life and the right of control.

## WICKED PROBLEMS

In an attempt to develop an understanding of how to organize activities/production, early organizational theory such as that developed by Frederick Taylor involved the concept of scientific management.<sup>21</sup> This construct attempted to apply the scientific process to managerial and organizational processes. Specifically, this involved developing centralized hierarchical methods of management and formal structures as the preferred methods of organizational design. This process of scientific management of organizations was initially very successful in industrial settings where tasks were well understood. The concept of a universal 'one size fits all' model that could be applied to all organizations was supported by Mooney and Riley (1931) in their Administrative theory (i.e., principles of management).<sup>22</sup> Clarke and Short (1993) offer that past organizational successes lead organizations to form

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<sup>19</sup> Clarke, Lee and James Short, 1993. "Social Organizations and Risk: Some Current Controversies", Annual Review of Sociology, Volume 19 (1993), pg. 375-399.

<sup>20</sup> Brion, Dennis J., 1991. *Essential Industry and Nimby Phenomenon*, 1991.

<sup>21</sup> Based on "Four Principles of Scientific Management" to achieve "the increased output per unit of human effort..." Frederick W. Taylor, in "Dartmouth College Conference on Scientific Management," p. 32

<sup>22</sup> Mooney, J. D., and A. C. Reiley, 1931. *Onward Industry*. New York: Harper & Row 1931.

mechanistic methods of control to simplify and routinize operations causes “organizations ... to be inflexible.”<sup>23</sup>

The early concepts, described above, of organizations and organization theory employed mechanistic constructs and supported rigid forms of control in organizational design. However as systems became more complex, problems moved from being tame<sup>24</sup> (easily controlled) to wicked<sup>25</sup> (something new, involving multiple stakeholders with different perceptions of the fundamental issue).

Bruce and Cote (2002) propose that all problems originate in our expectations. “When a discontinuity gap between what we expect and what happens becomes wide enough to cause us concern, we come to believe that we have a problem.”<sup>26</sup> They emphasize that solutions are found by increasing “knowledge and understanding” so that our expectations are realigned with reality.

Roberts (2000) divides problems into three types: simple, complex, and wicked. Simple problems are those where there is general agreement on both the problem and the solution. Problems become complex when stakeholders disagree on the solution, and wicked when “there is no agreement on the problem or its solution.”<sup>27</sup> Both simple and complex problems (also known as “tame” problems) can be solved using the mechanistic processes that characterize aggregative democratic structures. The distinguishing factor between tame and wicked problems is the agreement on what the problem is. So long as there is agreement on the problem, then regardless of the complexity, a solution may be found through existing methods. Wicked problems however require new processes that Roberts calls ‘coping strategies.’

Coping strategies range from authoritative schemes, where select stakeholders attempt to tame these problems through new rule sets, to directed methods of competition between stakeholders over competing solution ideas, and collaboration. Collaboration involves engaging stakeholders to define the problem and to develop solutions together by uncovering shared meaning. The driving force behind the collaborative approach is learning. By engaging stakeholders in an open discussion forum new learning can take place. It is this learning that fills the discontinuity gap between expectations and reality.

<sup>23</sup> Clarke, L. and J.Short, 1993. Social Organization and Risk: Some Current Controversies, Annual Review of Sociology, Vol. 19, 1993, p.375.

<sup>24</sup> “A *tame problem* is one for which the traditional linear process is sufficient to produce a workable solution in an acceptable time frame.” Conklin, E. J. and W. Weil, 1998. *Wicked Problems: Naming the Pain in Organizations*, 14 Oct 98, [http://www.3mco.fi/meetingnetwork/readingroom/gdss\\_wicked.html](http://www.3mco.fi/meetingnetwork/readingroom/gdss_wicked.html), p. 5

<sup>25</sup> “...problems are called “wicked” because they have the following characteristics: 1). There is no definitive statement of the problem; in fact, there is broad disagreement on what ‘the problem’ is. 2). Without a definitive statement of the problem, there can be no definitive solution. In actuality, there are competing solutions that activate a great deal of discord among stakeholders – those who have a stake in the problem and its solution. 3). The problem solving process is complex because constraints, such as resources and political ramifications, are constantly changing. 4). Constraints also change because they are generated by numerous interested parties who “come and go, change their minds, fail to communicate, or otherwise change the rules by which the problem must be solved.” Roberts, N., 2000. “Coping With Wicked Problems,” Feb 15, 2000, <http://www.inpuma.net/research/papers/sydney/nancyroberts.html>

<sup>26</sup> Bruce, R. and C, N., Cote, 2002. Taming Wicked Problems: Theory and Practice, *The Public Manager*, Fall 2002.

<sup>27</sup> Roberts, N., 2000.

Wicked problems can be seen as a form of fragmentation, with respect to the diverse set of preferences stakeholders hold towards differing methods of resolution, and “most projects today have a significant wicked component”, further:<sup>28</sup>

“ Fragmentation is social complexity, the number and diversity of players who are involved in a project. Social complexity requires new understandings, processes, and tools that are attuned to the fundamentally social and conversational nature of work.”<sup>29</sup>

Bruce and Cote (2002) support the need for stakeholders to come together in open dialog to actively share their view of the nature of the wicked problem as a process to develop new insights into each others perceptions. These actions allow stakeholders to identify their perceptions of the relevant issues surrounding the problem and defend their respective positions. This discourse “restructures the problem toward a consensus around issues of the wicked problem.”<sup>30</sup> Once restructuring of the wicked problem has developed a set of consensus issues, then traditional problem solving methods apply.

### QUARANTINE AS A WICKED PROBLEM

The aggregative democratic system has the potential to create an adversarial environment which limits the ability for open dialogue and full expression ideas. This limitation in the ability to express alternatives, and to engage in dialogue to allow mechanisms for citizen involvement other than as direct opponents in resisting proposed quarantine policy, fails to allow citizens to engage in what Bachrach and Alex Zautra (1985) note as problem-focused action. The inability to engage in collaborative dialogue fails to address the ‘discontinuity gap in information,’ noted by Bruce and Cote (2002). As noted by Roberts (2000) this results in insufficient information for all stakeholders to develop ‘agreement on the problem or its solution’ thereby resulting in creation of a wicked problem.

Further, this inability to engage in collaborative dialogue fails to allow stakeholders to participate in sharing of information to gain knowledge and appreciation and development of recognition of others full set of issues and concerns. As noted by Knight (1921), this failure to develop sufficient information results in uncertainty where outcomes are unknown and risk mitigation strategies are unable to be applied as insufficient information exists to specify numerical probabilities.<sup>31</sup> Traditional institutional means for problem solving like those of aggregative democratic practices rely on these risk mitigation strategies.

Allowing stakeholders to collaborate under systems such as deliberative democratic methods may offer more effective means of achieving acceptable quarantine policies. These deliberative democratic processes allow for ‘learning’ of stakeholder preferences that reduce uncertainty to measurable risk and allow complex problems to then be addressed through risk mitigation methods.

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<sup>28</sup> Conklin, J., 2005. *Wicked Problems and Social Complexity*, Chapter 1, *Dialogue Mapping: Building Shared Understanding of Wicked Problems*, Wiley, October 2005, pg 2.

<sup>29</sup> *Ibid*, pg. 3.

<sup>30</sup> Bruce and Cote, 2002.

<sup>31</sup> LeRoy, S. and L. Singell, 1987. Knight on Risk and Uncertainty, *Journal of Political Economy*, Vol. 25, No. 2, April 1987, p. 395.

Developing acceptable quarantine procedures during crisis can be seen as a wicked problem as it satisfies a number of characteristics of this type of problem:

- There may not be an agreement that one should be quarantined, and consequently deprived of his or her freedom, based on the specific medical condition. According to the CDC, “if a quarantine disease is suspected or identified, the CDC may issue a federal isolation or quarantine order.”
- Solving these concerns is complex due to constraints, such as limited resources and political ramifications. Also, complexity further arises as each new request for changes in quarantine policy is addressed involves new stakeholders with different opinions and differing levels of understanding of institutional processes and rules to effect quarantine policies.
- The population involved is often extremely small: according to the CDC, “few public health events prompted federal isolation and quarantine orders” noting the 1963 case of a traveler with suspected smallpox, and the recent 2007 case of passenger with drug resistant TB. CDC further notes that there haven’t been any mass-scale quarantines since the 1918-1919 Spanish Flu.

Consequently, the use of DDM would have provided a more acceptable process for determining the correct procedure when solving the problem. In 2007, Andrew Speaker, was put under quarantine for four weeks after he had been suspected of carrying extensively drug-resistant tuberculosis (XDR-TB).

While it is generally acceptable for one to be put under quarantine for safety reasons, concerns such as civil rights often arise. This is especially the case when the quarantine is considered excessive, as was the case of Andrew Speaker, who, as it turned out, carried a milder, less deadly form of the disease. According to Georgian Law, Speaker should have been limited to two weeks in home confinement, rather than the four weeks he spent in isolation.

This is a case where the issue was wicked as neither the problem nor the solution had a general consensus: while it was agreed an individual had TB, it was unclear whether his conditions were grave enough to impede traveling. Not having had an open discussion between physicians and the CDC, the physician OK’d the travel, while CDC declared him to pose a threat – enough to warrant forcing him in quarantine – something that should never have happened, given the conditions.

While this is only one example of a wicked problem, the extremely diverse population in America, where hundreds of thousands of people from all over the world flock to each year, causes a natural rift between subgroups in even the most basic beliefs and understanding.

Consequently, wicked problems, where even the existence of the problem is debatable, are very likely to increase in both number and intensity. Therefore, the need to develop and implement an improved and less hostile method of communication between opposing groups is increasingly important if we hope to achieve a truly democratic society, where even the smallest interest groups have a voice.

## SUMMARY AND CONCLUSION

As can be seen from the discussion, quarantine comprises the potential for undue burdens and disproportionate impacts on subgroups of the population. In order to minimize problems associated with resistance and difference in knowledge claims, it is important to have an open and genuine dialog. This dialog should engage the affected population and provide the opportunity for the entire group to come to a general consensus.

The process and mechanisms provided under DDM allow for this form of public debate to occur and as a means to solve the wicked problem of imposing quarantine on subgroups of a population.