What is the crisis? Defining and prioritizing the world's most pressing problems

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As consensus grows regarding the unprecedented global environmental challenges we currently face, so too does the notion that publicly funded science has a duty to dedicate resources toward overcoming these challenges. In order for scientists to shift attention and resources to the most pressing global problems, we must first enumerate these issues and establish consensus across academia as to the importance and feasibility of solving them. To this end, we have applied concept mapping to a large and diverse pool of disciplinary experts – the entire faculty of Cornell University – to empirically assess their opinions on what our most pressing global crises are, how they relate to one another, and how feasible it would be to solve them. We (1) define what Cornell University faculty see as the most pressing problems of our day, (2) sort them into relevant, modern "disciplines", and (3) rate them according to both their importance and the feasibility of solving them. This study reveals broad consensus across disciplines, groups global crises into seven thematic clusters that cross disciplinary boundaries, and rates issues relevant to all disciplines on a scale of importance and solvability. We believe that this provides a structured framework for both the scientific community and the global community to address global crises.

A growing awareness of the global crises confronting humanity is accompanied by the realization that the scientific community should focus more attention on solving these problems. In her 1997 presidential address to the American Association for the Advancement of Science, Jane Lubchenco proposed that scientists should formulate a new social contract that compels them to "devote their energies and talents to the most pressing problems of their day, in proportion to their importance" (Lubchenco 1998). In the same address, Lubchenco listed some of the most serious environmental crises, including biodiversity loss, natural resource depletion, climate change, atmospheric pollution, and massive collapse of marine fisheries, to name a few. In addition, Lubchenco recommended broadening the definition of "environmental issues" to include those that relate to human health, the economy, social justice, and national security (see also Hadorn *et al.* 2006). Lubchenco is not alone in calling science to action (eg Bazzaz *et al.* 1998). Many others have noted that complex socioeconomic problems cannot be adequately addressed without a multi-disciplinary, broad-based approach to research and solutions (Bradshaw and Bekoff 2001). If the scientific community is to shift attention and resources to the most pressing problems of the day, we must first enumerate those problems and establish consensus across academia as to their importance and the feasibility of solving them.

One obvious way to define and prioritize important global problems is to solicit the opinions of experts. Because the issues to be considered are numerous and span many disciplines, so, too, should the pool of experts consulted represent a variety of fields. To this end, we have applied a survey technique known as "structured concept mapping" to a large and diverse pool of disciplinary experts – the entire faculty at a major research institution, Cornell University, in Ithaca, New York – to empirically assess their opinions on what the most pressing global crises are, how they relate to one another, and how feasible it would be to solve them.

Concept mapping is a widely employed empirical survey method that can quantify and give thematic structure to the opinions of a given group on a particular topic. Concept mapping, as a participatory process, facilitates the involvement of a much broader group than do methods like expert panels, working groups, and position papers, while allowing much more flexibility in group input than researcher-managed processes, such as surveys (eg Trochim 1989). The concept mapping method used in this study is different from the popular concept mapping methods proposed by Novak (1990 a, b; Novak and Gowan 1984). Novak's concept mapping has become popular as an educational tool, is based on hierarchical structure, and stresses diagramming the relationships between concepts using relational phrases (eg "is in", "contributes to"). In contrast, structured conceptualization (Trochim 1989) is a software-based social-science methodology that uses brainstorming, multidimensional scaling, sorting, and rating to summarize how a group conceptualizes a topic.

The general procedure has been described in detail by Trochim (1989; 2006) and has a long history of use in fields such as public health (Trochim *et al.* 2006; Trochim and Kane 2005), program planning and evaluation (Caracelli 1989), psychology (Daughtry and Kunkel

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1993), and medicine (Donnelly *et al.* 2005). It is particularly useful as a starting point for investigating complex and interconnected ideas, because it provides a framework for organizing those ideas and because the results often lead to more specific and informed questions for further inquiry. This technique is particularly appropriate for the topics considered here, as it avoids the potential bias of conventional, pre-defined survey questions by allowing participants to develop the statements that will later be ranked and categorized. The shortcomings of this method are based on the fact that it is demanding of the respondent's time and can therefore decrease participation rates, and that the outcome is dependent on who is invited to participate (Trochim 1989). Here, we polled all academics at a major research institution, in an attempt to mitigate potential issues regarding sample size and universal representation within the academic community.

Using a structured concept mapping survey, we (1) define the most pressing problems of our day, (2) sort these problems into relevant, modern "disciplines", and (3) rate these problems according to both their importance and the feasibility of solving them. We describe the global crisis humanity currently faces, and sort and rate the components of this crisis to create a manageable, interdisciplinary research agenda. Within our analysis of these data, we look both at the global agenda and at issues that are historically relevant applications of ecology.

■ Methods

Our concept-mapping survey consisted of three phases: "brainstorming", "sorting", and "rating". Separate invitations to participate in each phase were sent to the 4169 individuals on the "all-academics" e-mail list of Cornell University as of June 13, 2006. This list includes all professors, post-doctoral fellows, and research staff employed by Cornell University. All phases of the survey were conducted on the internet, using software designed by Concept Systems Inc (Ithaca, NY; www.conceptsystems.com) specifically for use in concept-mapping projects. This survey was approved by Cornell University's Committee on Human Subjects.

Brainstorming

In the brainstorming phase, participants were asked to complete the following focus prompt in 50 words or less: "One significant crisis humanity currently faces is…". Because the purpose of the brainstorming phase was simply to generate as many unique statements as possible, no relative language was used in the focus prompt (eg "*most* important crisis"), and no registration or personal information was required of participants at this time. Participants were able to view all previously added responses, which appeared in a list below the focus prompt. The brainstorming phase was open for 2 weeks (June 13 to June 27, 2006), during which time 350 crisis

statements were submitted. These were edited for concision and redundancy by a discussion group consisting of the authors and several volunteers, and compiled to a final set of 116 unique crisis statements for use in all subsequent phases of the survey.

Sorting

In the sorting phase of the survey, participants were asked to sort all of the 116 unique crisis statements into groups based on thematic similarity. Participants were permitted to create as many or as few groups as they wished and to sort the responses based on any criteria they desired. The sorting phase was open for 8 weeks (August 19 to October 14, 2006), during which time a total of 70 responses were submitted. These responses were analyzed via multidimensional scaling (Kruskal and Wish 1978; Davison 1983) to produce two-dimensional plots of all 116 statements, based on their similarity to one another, as determined by respondents' groupings. The plotted statements were then parsed into statistically significant clusters via hierarchical cluster analysis (Anderberg 1973; Everitt 1980) to produce a series of "concept maps". There are many possible concept maps for any similarity plot, depending on the total number of clusters into which the responses are sorted. The objective is to select a single map that most accurately groups responses with similar themes. To achieve this, we followed a subjective review process described by Trochim (1989). A discussion group, consisting of the authors and several volunteers, reviewed a number of maps, beginning with those that had a high number of clusters (20) and moving down. For each successive map, two clusters from the previous map coalesced, and the group discussed the result. The final concept map was chosen by group consensus as the map with the fewest possible clusters that maintained thematic consistency within each cluster.

Rating

In the rating phase, participants were instructed to rate each of the 116 crisis statements from the brainstorming phase on two criteria: importance and feasibility. At this point in the survey, participants were asked to provide non-identifying demographic information on their gender, age, field of professional expertise (arts/humanities, natural/life sciences, physical sciences, social sciences, professional field), and academic position (adjunct professor, assistant professor, associate professor, full professor, post-doctoral associate, research associate, staff, or other). Ratings were based on a 1–5 Likert scale, ranging from "not at all important" and "not at all feasible" to "extremely important" and "extremely feasible". The rating phase was open for 2 weeks (June 29 to July 13, 2006), during which time a total of 122 responses were submitted. To assess overall agreement among demographic groups, pairwise correlation analyses were performed

between each group, for both importance and feasibility ratings. To identify specific responses which were rated differently by different academic disciplines, Tukey-Kramer tests were performed for each statement, with importance or feasibility as the independent variable, and the academic discipline of the respondent as the dependent variable.

■ Results

Sorting

We received 350 statements completing the brainstorming focus prompt; these were compiled to 116 non-redundant crisis statements (complete list available in WebPanel 1). A total of 70 participants completed the sorting phase of the survey, and a seven-cluster concept map was selected as the one that minimized the number of clusters while maintaining thematic consistency within each cluster (Figure 1a). The stress value is a goodness-of-fit statistic in multidimensional scaling, with lower values indicating a better fit than higher values. Trochim (1993) reports average stress values in concept mapping of 0.285, with a permissible range from 0.155 to 0.352. The stress value of the seven-cluster multidimensional scaling solution presented here is 0.334, which is within the acceptable range. Because a comprehensive list of clustered statements was prohibitively large for inclusion here, several representative statements from each cluster were selected and thematic names were assigned to each of the clusters by a discussion group consisting of the authors and several volunteers (Figure 1b; the entire list of responses, sorted by cluster, is available in WebPanel 1).

The distance between clusters on the concept map (Figure 1a) is a metric of how frequently points within each of those clusters were grouped together by respondents during the sorting phase, and can be interpreted as a proxy for thematic similarity or relatedness. Responses pertaining to crises such as biodiversity loss, overpopulation, climate change, and water scarcity aggregated near
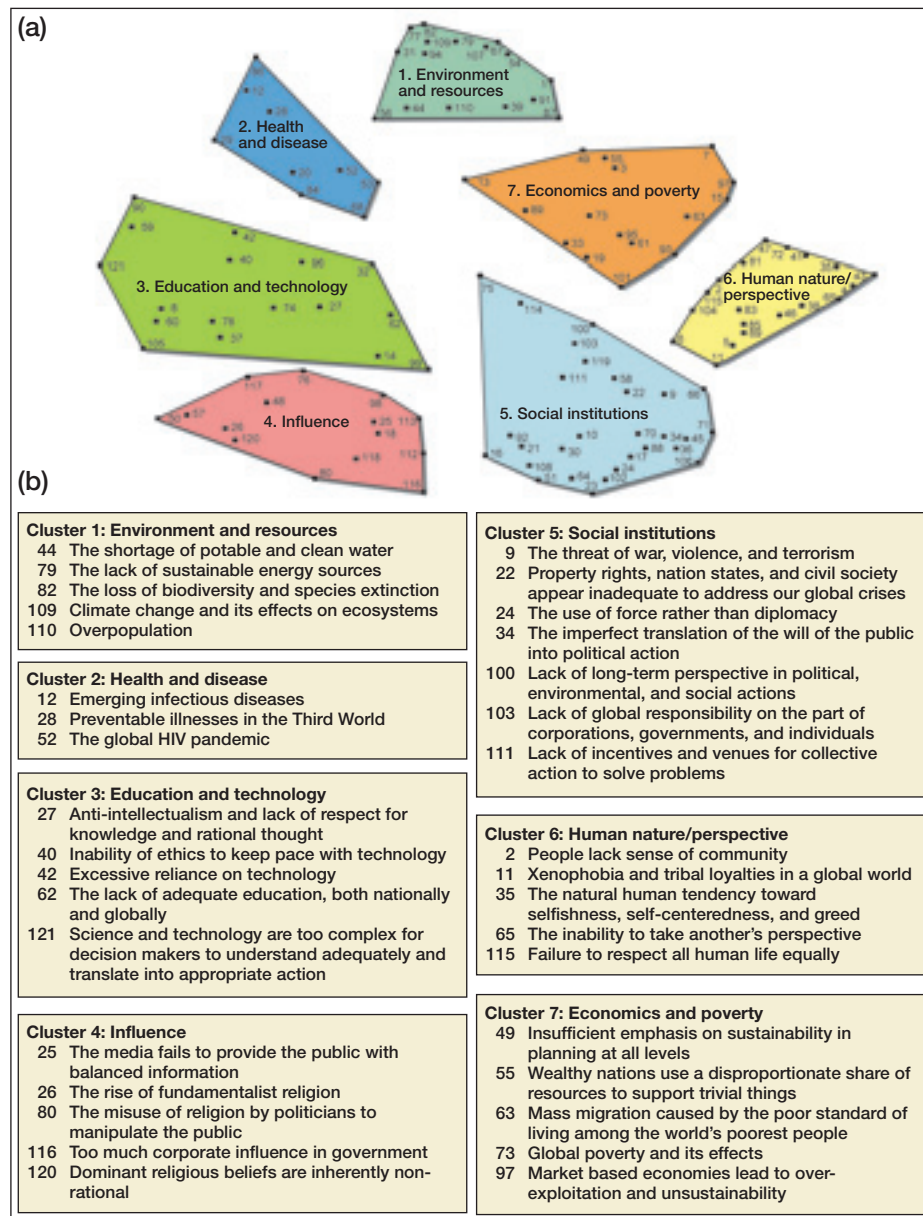

Figure 1. (a) Cluster map resulting from the multi-dimensional scaling and hierarchical cluster analysis (stress value of seven-cluster solution = 0.334). Numbered points correspond to the 116 unique crisis statements listed in WebPanel 1. Cluster names were assigned subjectively post-hoc by a committee of the authors and several volunteers. (b) Selected crisis statements from each cluster that were representative of that cluster's theme.

the top of our concept map, in a cluster we named *Environment and resources*. These are issues that have traditionally fallen into the sphere of applied ecology. The nearest neighbors to the *Environment and resources* cluster are the *Economics and poverty* cluster, which contains issues such as rural–urban migration and globalization, and *Health and disease*, which includes problems such as preventable illness in developing nations and the HIV pandemic. Note that these two clusters include issues within Lubchenco's expanded definition of "environmental issues" (Lubchenco 1998). Our map provides options for expanding crisis definitions further, depending on the perspective of the user and the relatedness of the clusters.
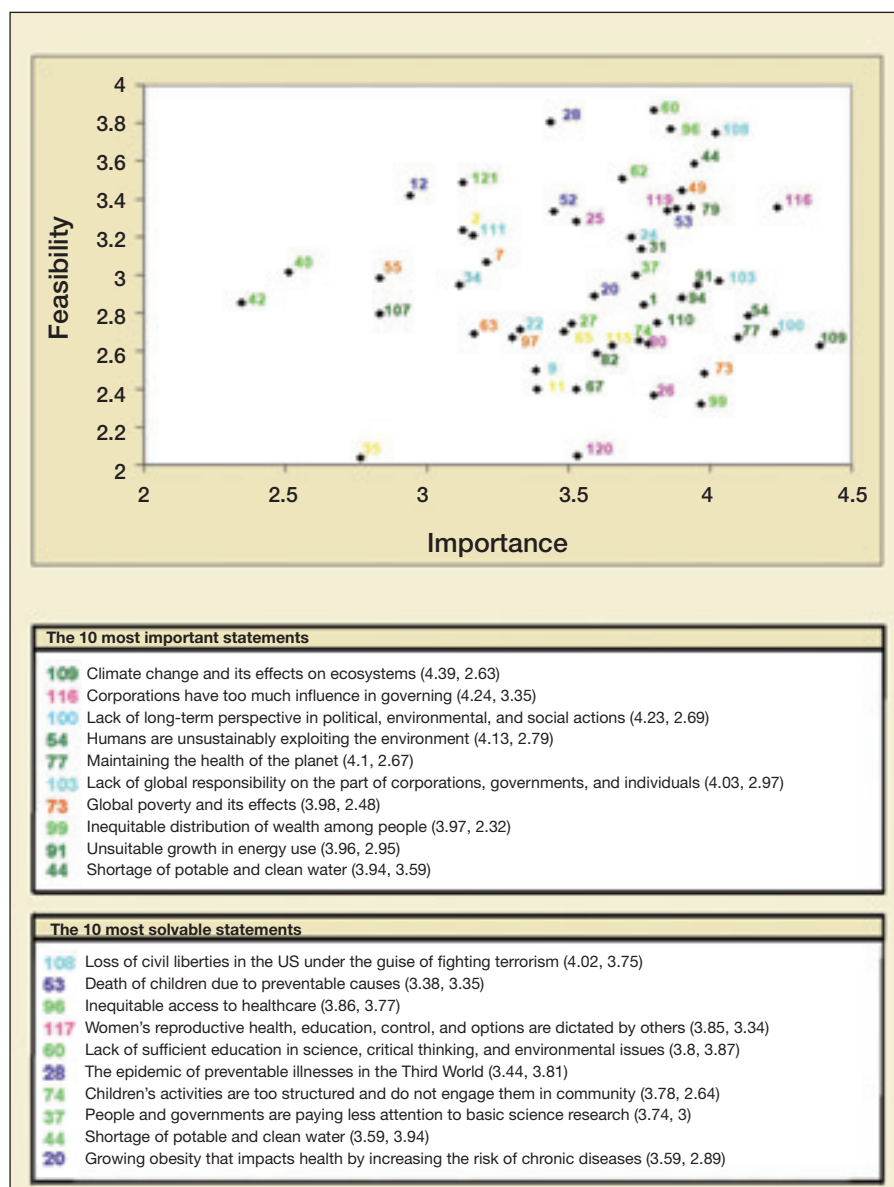
The 10 most important statements

109 Climate change and its effects on ecosystems (4.39, 2.63)
116 Corporations have too much influence in governing (4.24, 3.35)
100 Lack of long-term perspective in political, environmental, and social actions (4.23, 2.69)
54 Humans are unsustainably exploiting the environment (4.13, 2.79)
77 Maintaining the health of the planet (4.1, 2.67)
103 Lack of global responsibility on the part of corporations, governments, and individuals (4.03, 2.97)
73 Global poverty and its effects (3.98, 2.48)
99 Inequitable distribution of wealth among people (3.97, 2.32)
91 Unsuitable growth in energy use (3.96, 2.95)
44 Shortage of potable and clean water (3.94, 3.59)

The 10 most solvable statements

108 Loss of civil liberties in the US under the guise of fighting terrorism (4.02, 3.75)
53 Death of children due to preventable causes (3.38, 3.35)
96 Inequitable access to healthcare (3.86, 3.77)
117 Women's reproductive health, education, control, and options are dictated by others (3.85, 3.34)
60 Lack of sufficient education in science, critical thinking, and environmental issues (3.8, 3.87)
28 The epidemic of preventable illnesses in the Third World (3.44, 3.81)
74 Children's activities are too structured and do not engage them in community (3.78, 2.64)
37 People and governments are paying less attention to basic science research (3.74, 3)
44 Shortage of potable and clean water (3.59, 3.94)
20 Growing obesity that impacts health by increasing the risk of chronic diseases (3.59, 2.89)

Figure 2. *Ratings for the top ten statements in terms of importance and solvability. Numbers in parentheses are the x,y coordinates (importance and feasibility of each numbered item). Clusters colored as in Figure 1: dark green = Environment and resources (Cluster 1), dark blue = Health and disease (Cluster 2), light green = Education and technology (Cluster 3), pink = Influence (Cluster 4), light blue = Social institutions (Cluster 5), yellow = Human nature/perspective (Cluster 6), and orange = Economics and poverty (Cluster 7).*

Occupying the lower half of the concept map, the *Influence and ideology* cluster contains problems that arise as a result of misuse of power by religious groups, corporations, and the media. This cluster's two nearest neighbors are *Education and technology*, which deals with inadequate education and the rapid pace of advancing technology, and *Social institutions*, which contains statements that deal with armed conflict, shortsightedness in political decision making, and lack of adequate incentive structures to solve global problems. The final cluster, *Human nature/perspective*, deals with problems such as selfishness, lack of empathy, lack of sense of community, and xenophobia.

Rating

One hundred and twenty-two participants completed the rating phase of the survey. The crisis statements with the ten highest importance ratings and ten highest feasibility ratings for all demographic groups combined are listed in (Figure 2). These top-rated statements, along with the representative statements from each of the seven concept map clusters, are also presented on a Cartesian plot of overall importance rating versus overall feasibility rating (Figure 2). This is a particularly illustrative way to view crisis statements in light of their composite rating.

■ Demographic consensus

All participants in the rating phase were categorized by gender, age, area of expertise, and professional title. The demographic and disciplinary composition of survey participants (Figure 3) was representative of the Cornell University faculty as a whole, as categorized in a 2007 faculty summary report (Whalen 2007). Pairwise correlation analyses of the importance and feasibility ratings of different demographic groups (eg correlation of male versus female statement-importance ratings) demonstrated high levels of overall agreement among all groups on ratings of statement importance (r ranged from 0.83 to 0.94, average of 0.91) and less agreement between demographic groups on ratings of feasibility (r ranged from 0.75 to 0.86, average of 0.79). The variance in feasibility increased as importance decreased, which may indicate that participants were uncertain how to rate the statements regarding feasibility that they disagreed with or considered unimportant.

Tukey-Kramer tests were performed on all importance and feasibility ratings to identify specific responses for which there was significant disagreement among academic disciplines. These results again demonstrated broad consensus across disciplines, with agreement among all disciplinary groups on 94% of both importance and feasibility ratings. The statements which were rated significantly differently among disciplinary groups and the direction of disagreement are given in Table 1.

Table 1. The seven importance and feasibility ratings that were significantly different among disciplinary groups

	Life	Physical	Social	Professional
Importance				
15 the inability of people to understand that effects of social, economic, and environmental systems may occur long after their causes	3.48	=	=	↑
31 water scarcity	3.8	↓	=	↑
35 the natural human tendency toward selfishness, self-centeredness, and greed	2.7	↑	↓	=
49 the lack of emphasis on sustainability in planning at all levels	3.8	=	=	↑
60 the lack of sufficient, widespread education in science, critical thinking, and environmental issues	3.8	↑	↓	↑
99 the inequitable distribution of wealth among people	3.78	=	↑	↑
110 overpopulation	4.09	=	↓	=
Feasibility				
15 the inability of people to understand that effects of social, economic, and environmental systems may occur long after their causes	3.45	↓	↓	=
25 that the media shapes the news into manageable, ideological soundbytes that do not provide the public with balanced information	3.7	↓	↓	=
74 that children's activities are too structured and do not engage them in community	4.19	↓	↓	=
102 the abuse of US power	3.14	↑	↓	↑
104 materialism and overemphasis on money	2.1	=	↑	↑
108 the loss of civil liberties in the US under the guise of fighting terrorism	4.32	↓	↓	=
113 the failure of the liberal elite to recognize the benefits of globalization on the underdeveloped nations of the world	3.6	↑	↓	↓

Notes: The crisis statement in contention is given in the first column, followed by the mean rating, among life scientists, on a 1-5 Likert scale. The following three columns indicate whether the response was rated significantly higher than (↑), lower than (↓), or equal to (=) the rating by physical scientists, social scientists, and professionals, respectively.

■ Discussion

If the scientific community is to enter into a new social contract, adjusting its agenda to address the most pressing global crises of our day, these crises must first be identified and prioritized. Here, we demonstrate how an empirical survey technique – concept mapping – can be used to quantify the opinions of experts regarding global crises. The concept map produced by our survey reveals seven statistically significant clusters into which the participants sorted global crises. The content and arrangement of these clusters provide an information-rich visual map of broad thematic categories that can be used as a framework to guide theoretical, analytical, and experimental efforts.

In addition to defining global crises and organizing them thematically, our survey also allowed participants to rate both the importance of each crisis and the feasibility of solving it. These two metrics are simple and easy to collect, yet they provide extremely useful information for determining where science and society should focus attention, funding, and action. Interestingly, there was a high level of agreement on both the importance and feasibility

ratings of crises across all demographic groups. For the few ratings that were significantly different among groups, there were no apparent thematic patterns in the contentious crisis statements or the demographic groups in disagreement.

A plot of importance rating versus feasibility rating, divided into quartiles (Figure 2), offers an informative and intuitive view of the composite rating of crisis statements. It is evident, from the color-coded response numbers on the plot, that no single cluster dominated any one quadrant. All of the seven broad thematic categories contain both important/unimportant and solvable/insolvable issues.

Of particular practical interest are the quadrants on the right half of the graph. The upper right quadrant contains statements that were rated as both highly important and highly feasible to solve and, as such, are obvious candidates for immediate action. The shortage of clean water, inadequate education, and the HIV pandemic all appear in this quadrant. The lower right quadrant contains those statements that were rated as very important, but not highly feasible. This quadrant includes, perhaps not sur-
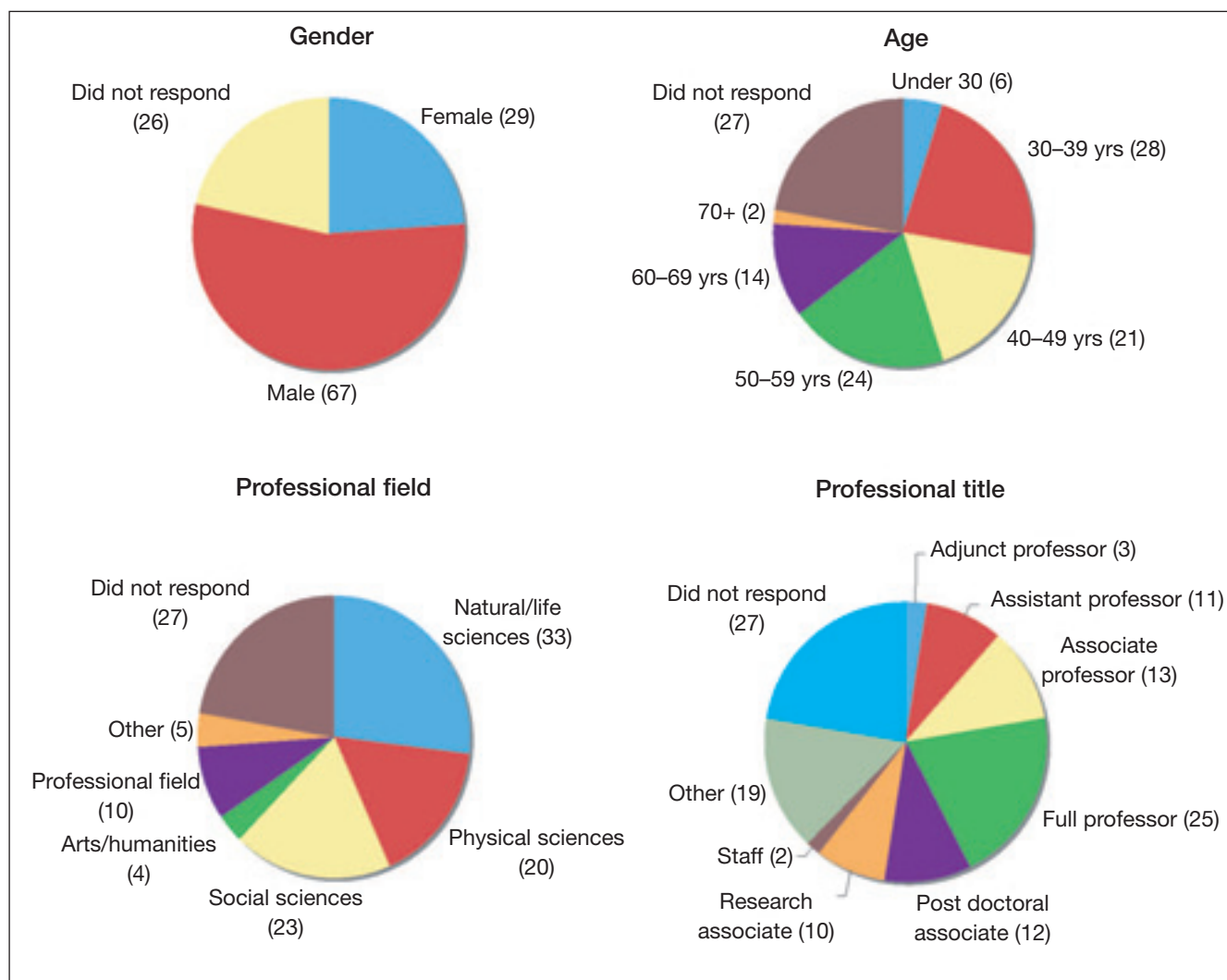
Figure 3. *Demographic and disciplinary classifications of the 122 respondents to the rating phase of the survey.*

prisingly, statements that deal with human nature and ideological conflict. However, it is interesting to note that politically hot topics such as climate change, dwindling energy reserves, sustainability, biodiversity loss, and overpopulation also occupy this important/infeasible quadrant.

The results presented here help define, organize, and prioritize the most pressing global crises of our day. As such, they should provide useful practical information for setting research and policy agendas and implementing the new social contract for science laid out by Lubchenco a decade ago. Of course, academic faculty represent only a fraction of those whose opinions will need to be considered on these important issues, and the conclusions presented here are far from definitive. Nonetheless, we feel that our results provide a starting point for focused dialogue and future inquiries, and that concept mapping offers a powerful and convenient tool to conduct such inquiries.

Concept mapping is a useful method whenever one wants to better understand what a group of people thinks collectively about an idea or topic. Particularly in this study, concept mapping reveals what a group of experts from many disciplines thinks about the various crises humanity faces. Furthermore, our findings highlight the crises which this group believes to be important and solvable. As a method, concept mapping often generates more questions than it answers, but it generates those questions in a structured way. These structures – the statements, clusters, and ratings – offer a rich visual map that can be used as a framework to guide deep theoretical, analytical, and experimental efforts. Where this study is concerned, the authors view the findings as a starting point in the process of considering the importance and solvability of the various crises we face, but also as a framework that can be used for scientific research, policy, and educational agendas. Finally, this study shows that problem solving is inherently interdisciplinary, and that understanding how a group of scientists thinks about these issues is a major step toward solving them. Potential avenues for future investigation include conducting more detailed concept-mapping surveys on one or more of the thematic clusters from this survey, or applying a survey similar to the one presented here to different demographic groups, such as politicians, business people, children, or the public at large.

■ Acknowledgements

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WebPanel 1. Complete list of crisis statement responses. The number preceding each statement corresponds to those listed in the figures. The two bold numbers, enclosed in parentheses, following each statement, are the mean ratings of that statement's importance and feasibility, respectively. The responses are sorted into the seven thematic clusters presented in the concept map (Figure 1a).

Environment and resources (Cluster 1)

1   The limited availability of energy reserves driving increasingly aggressive foreign policy and world instability **(3.8, 2.8)**
31   Water scarcity **(3.8, 3.1)**
39   The ecological, biodiversity, and human health drain caused by corporate farms and the vertical industry that goes from farm to fork in production of corn and corn products (eg high fructose corn syrup), hogs, etc **(2.9, 3.3)**
44   Access to potable and clean water **(3.9, 3.6)**
54   That humans are unsustainably exploiting the environment **(4.1, 2.8)**
56   Low birth rates are leading to aging populations **(1.8, 2.8)**
67   The resulting social and economic problems caused by the probable rise in sea levels by tens of feet in the next century **(3.5, 2.4)**
77   Maintaining the health of the planet, without which all life will wither and die **(4.1, 2.7)**
79   The lack of sustainable energy sources with minimal environmental impact **(3.9, 3.4)**
82   The loss of biodiversity and species extinction **(3.6, 2.6)**
87   The increasing risk of catastrophies and the expense of minimizing the economic risk **(2.7, 2.4)**
91   That there is unsustainable growth in energy use **(4.0, 3.0)**
94   The exhaustion of unsustainable energy resources, primarily fossil fuels **(3.9, 2.9)**
107   That invasive species are destroying our ecosystems **(2.8, 2.8)**
109   Climate change and associated global warming, and its effects on ecosystems **(4.4, 2.6)**
110   Overpopulation **(3.8, 2.8)**

Health and disease (Cluster 2)

12   Our inability to control emerging infectious diseases **(2.9, 3.4)**
20   The growing obesity that impacts health by increasing the risk of chronic diseases, especially diabetes, which shorten life spans and are an enormous economic drain on societies across the world **(2.9, 3.6)**
28   The epidemic of preventable illnesses in the Third World **(3.4, 3.8)**
29   That autism is currently the fastest growing disability in the US, affects individuals world wide, and there is no known cause nor cure **(2.0, 2.6)**
52   The global HIV pandemic and the poverty, marginalization, and disenfranchisement caused by it **(3.4, 3.3)**
53   The death of children due to preventable causes **(3.3, 3.9)**
68   How to solve the problems of Africa (ie disease, human rights, armed conflict) **(3.5, 2.6)**
84   That people need to sleep more **(2.0, 3.5)**
86   That there are about 1000 asteroids that could wipe out *Homo sapiens* and most other species (ie our census of the asteroid population is profoundly inadequate) **(1.7, 1.8)**

Education and technology (Cluster 3)

8   An inability to understand how the world actually works. The crisis is intellectual **(2.9, 2.7)**
14   The profound income inequality between the "developed" countries and the rest of the world **(3.7, 2.6)**
27   Anti-intellectualism and lack of respect for knowledge and rational thought **(3.5, 2.7)**
32   An inadequate psychological, emotional, and social development during formative years **(2.5, 3.1)**
37   That people and governments are paying less and less attention to basic science research such as mathematics and physics **(3.0, 3.7)**
40   The growing gulf between what is technologically possible and what people are ethically or culturally willing to accept **(2.5, 3.0)**
42   Excessive reliance on technology **(2.3, 2.9)**
59   That biotechnology is solving problems, but is also changing the very definition of what it means to be human **(2.3, 3.0)**
60   The lack of sufficient, widespread education in science, critical thinking, and environmental issues **(3.9, 3.8)**
62   The lack of adequate education, both nationally and globally, without which no one can begin to understand or address all the other crises in the world **(3.7, 3.5)**
74   That children's activities are too structured and do not engage them in community **(2.6, 3.8)**
78   The population growth driven by religious justifications and policies **(3.2, 2.6)**
90   That current technology is inadequate and irrational and must change **(2.3, 3.1)**
96   Inequitable access to healthcare **(3.8, 3.9)**
99   The inequitable distribution of wealth among people. **(4.0, 2.3)**
105   The inability to understand metaphor **(1.9, 2.7)**
121   That the technology and science that make society run are too complex for decision makers to understand adequately and translate into appropriate action **(3.1, 3.5)**

Influence (Cluster 4)

18   The popular press's practice of sensationalizing minor "crises" while ignoring major crises **(3.4, 3.1)**
25   That the media shapes the news into manageable, ideological soundbytes that do not provide the public with balanced information **(3.5, 3.3)**
26   The rise of fundamentalist religion and the attendant intolerance, hatred, and violence, both at home and abroad **(3.8, 2.4)**

WebPanel 1. *(Continued)*

48 The misuse, maluse, disuse, half-use, prostitution, and hijacking of language. **(1.9, 2.7)**
50 The unwillingness of people to accept God's love for them as sinners saved by the sacrifice of His only Son, Jesus Christ **(1.2, 2.1)**
57 The abundance of individuals willing to die in the name of a religious war, most notably within Islamic communities **(3.0, 2.2)**
76 The weakening of the sanctimony of marriage (ie same-sex marriages) by people who use the institution of marriage to push their agenda of forced inclusion **(1.4, 3.3)**
80 The misuse of religion by politicians to manipulate the public **(3.8, 2.7)**
98 That the electorate is inadequately educated and is therefore easily manipulated by dangerous political leaders **(3.6, 3.2)**
112 The liberal media distorting the truth **(1.7, 3.3)**
113 The failure of the liberal elite to recognize the benefits of globalization on the underdeveloped nations of the world **(2.3, 3.4)**
116 That corporations have too much influence in governing **(4.2, 3.4)**
117 That women's reproductive health, education, control, and options are dictated by others rather than individual decisions **(3.3, 3.9)**
118 That scientists have too little influence in governing **(3.1, 3.3)**
120 The dominant religious beliefs that are inherently non-rational, discourage clear, logical thought about reality, and encourage radical action and points of view **(3.5, 2.0)**
121 That the technology and science that make society run are too complex for decision makers to understand adequately and translate into appropriate action **(3.1, 3.5)**

Social institutions (Cluster 5)
9   The threat of war, violence, militarism, terrorism, and bioterrorism **(3.4, 2.5)**
10 Attempts to overcome intercultural conflicts by unilaterally imposing the values and standards of the western culture on other societies **(3.4, 2.9)**
16 Corporate and government control of the media **(3.5, 3.2)**
17 The proliferation of weapons of all kinds, including nuclear weapons **(3.6, 2.9)**
21 The Palestine–Israel conflict **(3.3, 2.2)**
22 That property rights, nation states, and civil society as we know them appear to be inadequate to address social problems, including climate change and community-based terrorism **(3.3, 2.7)**
23 Growing power of the military–industrial complex **(3.7, 2.9)**
24 The use of force rather than diplomacy **(3.7, 3.2)**
30 Corporate power and insensitivity to their employees and the people they serve **(3.2, 3.2)**
34 The lack of true democracy (even in the western world) to collectively decide how to respond to all the other problems **(3.1, 2.9)**
35 The natural human tendency toward selfishness, self-centeredness, and greed **(2.8, 2.0)**
36 The political and economic corruption and misuse of power **(3.8, 2.7)**
45 The failure of leadership (especially in US) to make peace and the well-being of the global community a priority **(3.7, 3.2)**
51 The incipient fascism or the rise of oligarchies in the US (one-party government, subservient media, etc) **(3.4, 3.1)**
58 The decline of civil society organizations (eg unions) and the decline in capacity to build an organization to change the crisis **(2.9, 3.1)**
64 US militarism and invasion of foreign nations **(3.7, 3.3)**
66 The apathy and ignorance of the powerful (ie western civilization) **(3.5, 2.5)**
70 The short political turnover time and the resulting shortsightedness in policy decisions **(3.2, 3.0)**
71 The proliferation of military arms to Third World countries that drain limited resources away from countries that need to develop economies that can educate, feed, and care for their populations **(3.6, 3.0)**
75 The excessive misuse and abuse of consumer credit and its attending social and economic consequences **(2.5, 3.5)**
92 The accumulation of wealth in the form of (private) property; the so-called "ownership society" **(2.9, 2.6)**
100 The lack of foresight (long-term perspective) in political, environmental, and social actions **(4.2, 2.7)**
101 That the adaptive ability of humans to ignore unpleasant and inconvenient facts (ie denial) complicates many global crises by delaying corrective action **(3.5, 2.5)**
102 The abuse of US power **(3.9, 3.1)**
103 The lack of global responsibility on the part of corporations, governments, and individuals **(4.0, 3.0)**
106 The lack of political structures that enable the development of a fair, orderly society that promotes education and the economic development necessary to feed and clothe the population **(3.7, 3.1)**
108 The loss of civil liberties in the US under the guise of fighting terrorism **(3.8, 4.0)**
111 The lack of incentives and venues for collective action to solve problems **(3.2, 3.2)**
114 The lack of equal rights for all people **(3.9, 2.7)**
119 The pessimism, cynicism, and the attendant political paralysis (ie the erroneous belief that we cannot provide for every person in the world, while rebuilding the environment) **(3.2, 2.9)**

Human nature/perspective (Cluster 6)
2   That people lack a sense of community **(3.1, 3.2)**
4   The lack of moral responsibility **(3.2, 2.7)**
5   Isolationism **(2.6, 3.1)**
6   The loss of confidence in and commitment to "public goods" (ie confusing that deficiencies in the public sector mean that we no

WebPanel 1. *(Continued)*

longer need to create goods, services, ideas, public values, and norms that serve the well-being of all people) **(3.2, 3.2)**
11   The xenophobia and tribal loyalties in a global world (eg nationalism, sexism, racism) **(3.4, 2.4)**
35   The natural human tendency toward selfishness, self-centeredness, and greed **(2.8, 2.0)**
38   Misplaced values **(2.7, 2.2)**
41   A lack of understanding of how and why we value things **(2.5, 2.8)**
43   "Globalization" and the unlimited exploitation of underdeveloped countries **(3.2, 3.0)**
46   Self-indulgent, violent, moralistic, and judgmental behavior **(3.0, 2.2)**
47   An inability to understand or accept the consequences of our actions (eg on others and the environment) **(3.5, 2.8)**
65   Lack of the ability to take another's perspective (ie empathy, point-of-view) **(3.5, 2.7)**
69   An "us versus them" mindset that manifests itself at various levels: Muslim–Christian; gay–straight; Israeli–Palestinian; rich–poor **(3.7, 2.2)**
72   The fear of an impending global crisis **(2.2, 2.6)**
81   The violence that occurs as a result of human hopelessness **(3.3, 2.4)**
83   The de-emphasis of people's roles as creative producers **(2.5, 3.1)**
85   The "winner-take-all" societies which cause people to go to extreme lengths, often unethically and at the expense of others, in order to succeed **(3.4, 2.6)**
104 Materialism and overemphasis on money **(3.2, 2.5)**
115 Failure to respect all human life equally **(3.7, 2.6)**

Economics and poverty (Cluster 7)
3   That our consumerist lifestyle is exacerbating other problems, such as global warming **(3.7, 2.9)**
7   The increasing physical and intellectual distance between people and their environment **(3.2, 3.1)**
13   The conflict between our biologically programmed behavior and the demands of the modern world **(2.5, 2.2)**
15   The inability of people to understand that effects of social, economic, and environmental systems may occur long after their causes **(3.6, 3.0)**
19   Inequitable access to adequate housing **(2.9, 3.3)**
33   That people are not happy **(2.1, 2.1)**
49   The lack of emphasis on sustainability in planning at all levels **(3.9, 3.4)**
55   Overpopulation in wealthy nations that use a disproportionate share of resources to support trivial things **(2.8, 3.0)**
61   That the American middle-class lifestyle and its capitalistic philosophies are leading to unsustainable behavior, which is compounded by the desire of people throughout the world to live like Americans **(3.7, 2.9)**
63   The migration between rural–urban and developing–developed countries caused by the poor standard of living among the world's poorest people **(3.2, 2.7)**
73   Global poverty and its effects (ie vulnerability to exploitation, disease, political and/or religious manipulation, political stress, and no healthcare) **(4.0, 2.5)**
89   That people are overwhelmed by the number and magnitude of crises **(2.5, 2.8)**
93   That society no longer allows time for contemplation, careful thought, or even reading a good book **(2.9, 3.4)**
95   Human suffering **(3.4, 2.0)**
97   That market-based economies lead to over-exploitaiton and unsustainability **(3.3, 2.7)**
101 That the adaptive ability of humans to ignore unpleasant and inconvenient facts (ie denial) complicates many global crises by delaying corrective action **(3.5, 2.5)**
102 The abuse of US power **(3.9, 3.1)**
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