

## Democracy and Policy Games The New Information *Panchayats*

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*This article attempts at creating ways of contextualizing and visualizing the statistical information such as the census and surveys conducted by Bhasha, an Non-Governmental Organization (NGO) working in the tribal belt of Gujarat to construct a critique on the policy making processes. Looking at policy making processes as the methodologies that are used while deciding the relevant measures to be taken for policy formulation and implementation, one will have to try to elaborate on a set of cause and effect modules to determine the reasoning behind the decisions that are made. The reciprocity of these modules will eventually try to bring out the interconnectivity of the cause and effect of policy making. Working with the tabular construct of statistical information, one will initially try to visualize this information for the purpose of drawing inferences out of the data. Once the visualization part has been accomplished, one could proceed towards effective contextualization of these inferences to create a critique on the indices of the Quality of Life (QoL) of the people. These indices would then create the necessary context within which the policy directives could be constructed. It is the transformation of information from the statistical construct to a visual one that could enable broader participation of people in policy making. Looking at the changes in these visualizations in time would warrant a critique on the cause and effect model of policy directives. At the foundational level, the entire process is an exercise in understanding effective ways of communicating the necessity for change and tracing it within the domain of policy making.*

### INTRODUCTION

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Any scientific discovery, whether innovation or invention has its basic genesis in the cause and effect life cycle. Therefore, a scientific theory is created to gratify an explanation for a known effect and it is tested by predicting the effects and checking them via experiments and observations. Thus, the effects in turn become the reason for the sustenance and acceptance of a scientific theory. Extending the same idea into representational mechanics, one can contend that the inconvenience of inferring results out of statistical representation of data leads to the need for a more visual medium. Thus, the tediousness of statistical data becomes the cause for creating visual explanations for statistical inferences.

A visual method of communication involves specification of problem areas based on an interpretation of the statistical information. One can create alert systems, establish contexts

and represent information with appropriate search methodologies that continuously mine relevant information within the tabular structure of columns and rows of data. This process of conversion of the tables within a database into a meaningful and contextual set of ‘input objects’ that feeds into the visual Representation System becomes an imperative part of the policy making processes. Problems within the abstraction of the visual medium are easier to identify and hence, effectively represented in the policy making processes. Thus, inferences derived out of these visualizations become the cause of the appropriate policy decisions.

Changes initiated by policy when mapped over a timeline could serve as a test-bed for evaluating the effectiveness and extent of a policy implementation. The inferences drawn out of the visualization point to a certain set of indices which can be assimilated into an expression for the Quality of Life (QoL) within the region under study. Here, the region of study is the tribal regions of Gujarat. These indices then serve as the markers on which a policy is evaluated. So, looking at the same methodology of visualization over the axis of time would lead to an understanding of the effect of the policy on these indices. This, in turn, will help in creating contexts for a more viable solution in terms of future policies. Hence, a policy is nothing more than an expected visual representation of statistical data about the future of a place, which means that now the policy is the cause that creates the effect of change in statistical information about a region represented using visualizations.

A development cycle of a region can be broken down into identification of problem areas, creation of a contextual policy for development, policy implementation and identification of the next set of problem areas. Within this reciprocity of relationship between the cause and effect, one can represent a development cycle by creating visualizations out of statistical data, timelines out of policy, map changes with policy implementation and create proper indices for evaluating QoL.

## BACKGROUND

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The *Bhasha* Research and Publication Centre, an NGO working for tribal development, in and around Tejgadh has been organizing regular health camps primarily in the Vadodara district of Gujarat, India since 2002. Along with collecting data in relation to patient health, they have also been making surveys relating to land records, occupational patterns, migration patterns, malnutrition and surveys about specific diseases such as Sickle Cell Anaemia, Silicosis, Tuberculosis, Pellagra and Handicaps. It has its own set of constraints as to the amount of investment it can make into these surveys, and it has a dedicated set of field workers who are ready to respond to change and train themselves for any new technological solutions.

The article has its immediate impetus in the attempt to look at an effective methodology for automating the process of updating patient records for various health camps that *Bhasha* organizes. Thus, in effect, in the beginning there was an organization that had the responsibility of organizing health care in a region that is affected by a diversity of diseases ranging from the genetic disorders such as Sickle Cell Anaemia to problems of malnutrition such as Pellagra. While conducting these health camps and running a clinic in the region, the doctors and the field workers have maintained digital records of the patients, but they have had problems of redundancy and multiple entries for the same patient. Hence, in collaboration with Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT), they initiated a project on organization and visualization of health care information in an effective manner.

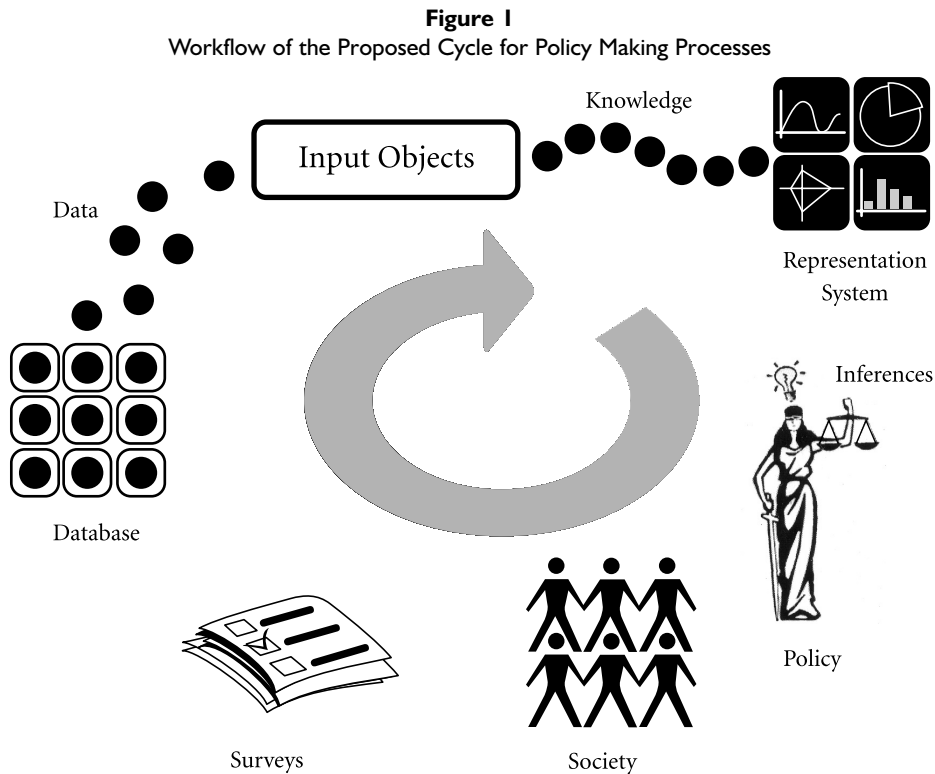
## SURVEYS, DATABASE AND DATA

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Health care in the twenty-first century is not a reference index for the support system for patients suffering from various diseases occurring in particular regions. It serves the purpose of evaluating QoL in a society. In underdeveloped regions, the impact of the failing health of an individual is not just a function of his abilities to support his family; but it is also a function of the family's ability to support his health care expenditure. It reflects upon the ability of the family to sustain itself with the loss of one of its working member. Thus, the tribal imagination requires not just an affordable cure for diseases but also a methodology of preventing outbreaks of diseases wherever possible.

Prevention, irrespective of the economics of an area is always a function of the amount of knowledge that one has about the area. Knowledge about the area is again directly related to the amount of usable information there is about the people of that area. The project was initiated with the assumption that a proper mix of societal, occupational, cultural, economic and health information would create a system that could actively be used to create a holistic idea about the dynamics of a region and serve the purpose of effectively evaluating the policy matters with respect to tribal life in and around Tejgadh.

On this presumption, the content of the surveys already being conducted by the NGO were taken into account and a new set of survey questionnaires created. The process of revising these questionnaires is secondary for the purpose of this article and one would like to move beyond the act of creating surveys, database and data as represented in Figure 1. The process of imaging and visualizing information begins at this level. Before we go into the dynamics of representation, we would like to enlist the sources of information at hand.



The primary information source would be the data collected by Census of India. It comprises of the primary census abstract, economic tables, socio-cultural tables, houses, household amenities and assets, migration and fertility tables. Primary census abstract data provides information on population (0–6 years), literates, total workers, main and marginal workers, type of workers: cultivators, agricultural labourers, workers in household industries and other workers, non-workers of individual Scheduled Castes (SC) and Scheduled Tribes (ST) in a state by sex and rural/urban break up (Primary Census Abstract 2001).

The secondary information source would be the set of revised survey questionnaires created for the perusal of *Bhasha* field workers. Since the census is limited to village level data, one has to assume that information about individual people would be accessible from this secondary information source. One needs information about individual people in order to represent migration and the spread of diseases and also income groups, debts, communities, crafts, agricultural produce, etc.

With the database in place, one could possibly move towards creating a Representation System that takes this data into perspective and lends a visual medium to enable better understanding of the data at hand. This in turn, takes us to the next phase of this development cycle.

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## INPUT OBJECTS AND REPRESENTATION SYSTEM

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In information sciences, it is generally assumed that the bridge between data and information is a context which gives a specific meaning to the data. The meaning enables the transformation of data into information. This understanding of context is inherent within the structure of the proposed input objects in Figure 1 that help create the visual medium of data expression.

So applying a bit of systems logic, one can look at the Representation System as a black box with input being the set of relevant questions (queries being performed on the tables) mixed with relevant set of answers (results of these queries) within the context of that question and the output being a representation that enables a better understanding of the answer. The use of the phrase knowledge in between the input objects and the Representation System in Figure 1 is an attempt to signify that relevant contextual information is already present within the tables; it is the transformation of this information into a visual construct that could enable better heuristics of understanding.

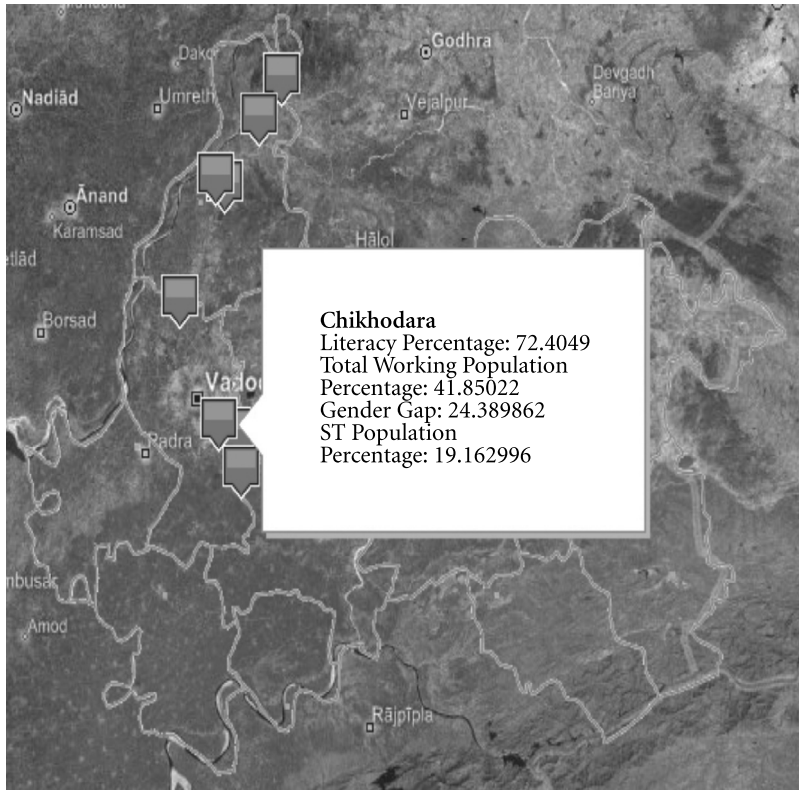
The major problem remains unanswered is how you create a visual construct that incorporates all the information that the input objects can provide to the Representation System. Considering that the information is about people of a particular area of interest. Then, the area becomes the focal point. Since all the information is a subset of the area, therefore a representation methodology that represents the area can incorporate all the information about it. The best way of representing an area is to create a map of the area. Hence, the proposed Representation System should grow out of the map of the area of interest.

The second major problem is of accessibility. At the most fundamental level, the Representation System should be open-ended, accessible, open to newer methods of visualization and evolving. Herein we solve the problem of accessibility and create a map of the area together by first eliminating the possibility of stand-alone applications and then looking at the possibilities of a web-based mapping solution, such as Google Earth and Microsoft Virtual Earth.

Given that one knows precise location of villages in and around Tejgadh in terms of latitude and longitude, creating alerts with respect to certain problems would provide an effective way of looking at data being collected. All that one requires is a scale of evaluating whether a

problem requires an alert in a particular area or not. With the semantics of a problem figured out, representation is merely a function of creating pushpins with relevant information on it. A pushpin on a digital map is a representation for the intersection of latitude and longitude to represent the position of a place. Once you click on a pushpin, it shows you the relevant information. The attributes for data representation are chosen and then, represented on the precise location of the area of a map using a pushpin as shown in Figure 2.

**Figure 2**  
Pushpins Displaying Relevant Statistical Information About the Village Called Chikhodara



(Courtesy: Primary Census Abstract, Census 2001)

Once the places are identified and pinpointed on maps using pushpins, one could proceed with different kinds of graphs, plots and charts to look at information in a variety of ways. Conceptually one has to look at the following two ideas to proceed further:

1. Health care is not just about maintaining patient records and treating diseases. It also incorporates a wider approach to problem solving. It encompasses lifestyle issues, economic well-being and a general critique of QoL.
2. Policy revolves around approaches to define the problematic. The way one defines it creates the path to a solution. It is the multiple perspectives with which we see a problem, that create a variety of methodologies for problem solving. In the present democratic set-up, we choose the policy makers and leave the rest of the processes of governance to them. In an ideal democratic set-up, mass participation in policy making should be a viable option. Between the present and the ideal, lie the realms of the possibilities which we can explore with a simple online mode of communication—a web-based information system.

## RIGHT TO INFORMATION

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Before one proceeds towards a discourse on the policy making process, one needs to look at a major ingredient that would be necessary for the democratic functioning of the website under consideration. Addressing the idea of policy making mentioned above, one needs to understand that participation in policy making is not just an act of criticizing the government. It involves proactive participation which in turn requires a certain amount of information about the place and the mechanics of the functioning of the place before one could jump into the act of making a policy. This requirement of information can be addressed using the fundamental Right to Information under Article 19(I) of the Indian Constitution. As early as in 1976, the Supreme Court ruling in the case of Raj Narain versus State of Uttar Pradesh said that people cannot speak or express themselves unless they know. Therefore, right to information is embedded in Article 19 (<http://www.ndtv.com/rti/faqs.asp>). It mandates timely response to citizen requests for government information. Right to Information Act, 2005 provides the effective machinery to exercise this right.

The Act specifies that citizens have a right to:

1. Request any information (as defined in Section 2(f) of the Act).
2. Take copies of the documents.
3. Inspect documents, works and records.
4. Take certified samples of materials of work.
5. Obtain information in form of printouts, diskettes, floppies, tapes, video cassettes or in any other electronic mode or through printouts.

In terms of the Section 2(f) of the Act, information has been defined as any material in any form including records, documents, memos, e-mails, opinions, advices, press releases, circulars, orders, logbooks, contracts, reports, articles, samples, models, data material held in any electronic form and information relating to any private body which can be accessed by a public authority under any other law for the time being in force (Right to Information Act 2005).

The Act mandates government bodies to digitize their official records for the perusal of the citizens. This very act of digitization could be combined together with the census information and one could have a macroscopic view of the living conditions in a town or a village and the policies and amount of investment that the government has made in the area. This cross-comparison of the policies to their outcome is feasible because of the right to information. It is also fundamental towards understanding the basic theory with which we started. The policies have a certain influence over the living conditions in a place and the living conditions in general specify the next set of policy decisions.

## ENCYCLOPEDIA OF QoL

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Wilson (2002) came up with an endearing idea when he described in one of his articles entitled ‘The Encyclopedia of Life’, an electronic page for each species of organism on Earth, available everywhere by single access on command. The page contains the scientific name of the species, a pictorial or genomic presentation of the primary type specimen on which its name is based, and a summary of its diagnostic traits. The page opens out directly or by linking to other databases, such as ARKive, Ecoport, GenBank and MORPHOBANK. It comprises a summary of everything known about the species’ genome, proteome, geographical distribution, phylogenetic position, habitat, ecological relationships and, not least, its practical importance for humanity.

The page is indefinitely expansible. Its contents are continuously peer reviewed and updated with new information. All the pages together form an encyclopedia, the content of which is the totality of comparative biology (Wilson 2002).

The fact the one can create centralized systems to produce information on a large scale is not a distant figment of imagination. Information lies all around us in a variety of ways and one may use these nuggets of information in a variety of other ways that might be beyond their generic scale of usage. Connecting distributed channels of information has been a central objective for the human race since it started understanding the universe around it. The idea that every information is just a mouse click way enralls us with a certain sense of immaculate



power. We have always tried to convert knowledge into a centralized entity. During the oral tradition, it was the teacher. In the Gutenberg era, it was a big giant book called the Encyclopedia and in the present digital era, we call it Wikipedia.

Given that one can effectively pinpoint a place on a map, let us begin with the world map as an encyclopedic entity. One can choose a place, which in the present context should be Tejgadh. Once you make a choice of the place, the click of the mouse on the pushpin that points to Tejgadh takes one to an indefinitely expansible electronic page, which starts with a note on the place in general and then moves into the information available on it. Borrowing information from the Census of India, any other credential surveys conducted by NGOs or private organizations or government, one can literally create an encyclopedic overview of the place. Combine this survey information with the policy detailing and the expenditure accounts of the government in relation to the process of development of the region, the depth of the information increases manifold.

With information ranging from education, literacy, occupation, lifestyle issues, culture, economy to health, topography, infrastructure, connectivity of the place in terms of mobiles, electricity, roads and trains, one could possibly cross-connect policies to these independent sets of information packages. Somewhere within the structure of this panoramic view of the place, one hopes to eventually capture the indices of QoL of the people who live in Tejgadh.

Sen (1993) seems to believe that the index of QoL points to an evaluative space where one can distinguish between two different questions: (a) ‘What’ are the objects of value? (b) ‘How valuable’ are the respective objects? Even though ‘formally’ the former question is an elementary aspect of the latter, nevertheless, the identification of the objects of value is substantively the primary exercise which makes it possible to pursue the second question (Sen 1993). This encyclopedic notion of collecting information in its entirety about places creates the perfect evaluative space for contextualizing value.

Value in a certain way is dependent upon the problem at hand. If the question centres on the relevance of midday meal in primary schools, one has to look at the literacy rate of a particular place and combine it with malnutrition cases recorded in the health care institutions around that place. If the literacy rate is high and the malnutrition cases are low, the policy would most definitely be a waste of government resources. On the other hand, if either the literacy rate is low or the malnutrition cases are high, probably the policy is relevant in the present context. The index of QoL that are relevant in addressing this policy issue are related to health and education. To a certain extent, one could even involve infrastructure details of the schools which carry out the midday meal programme, but the rest of the information play a minimal role in determining the relevance of this policy. Value is contextual and so are the indices of QoL.

At the level of inferences to be made out of the Representation System as shown in Figure 1, identification of the possible problem areas followed by prioritization of these problem areas becomes the foundation towards effective policy making. While prioritizing these problems, one can envision the scope of the problem in terms of the number of aspects of everyday life that a particular problem might affect. The aspects point the indices of QoL in question, thereby determining the relevance of the problem at hand. The Representation System in effect encompasses the life of people in general. Figure 3 represents the spread and interconnectivity of the aspects of everyday life of Tribal people from the perspective of Bhasha's operations.

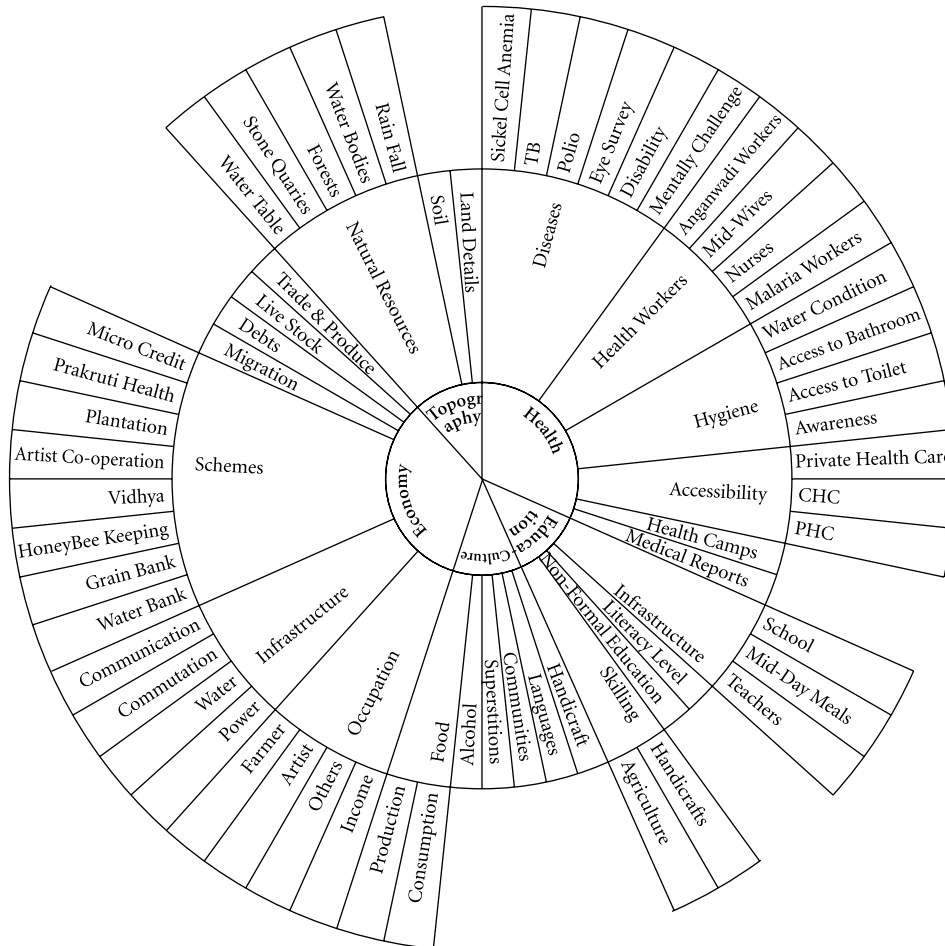
The question is when we can pledge to capture and create an encyclopedic notion of life and species, why haven't we been enthusiastic enough to bother with quality of the lives of people themselves? In terms of the complexity of the problem, it offers more or less a similar set of challenges. Variety of platforms for data storage, distributed information packages, redundancy of information and list of challenges is undeniably long, but the parts of this jigsaw puzzle are easier to envision and record. We have an understanding of the issues that concern themselves with development. The act of combining them together, ready to be accessed at the click of a button seems to be straight out of cyberpunk novel written by Gibson (1997), but to a certain extent it gives us the different kind of insight into the problems that a region might face.

## THE GAME OF POLICY

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Lem (1974) in one of his short stories entitled *The Seventh Sally* describes a mighty constructor–benefactor called Trurl who is approached by Excelsius, the Tartarian, the ruler of Pancreon and Cyspenderora after being banished from his own kingdom for being a brutal king. The king wants his kingdom back and Trurl has no wish to comply with such a request. Thinking about it for a moment of two, he decided to build an entirely new kingdom for the king. There were plenty of towns, rivers, mountains, forests and brooks, a sky with clouds, armies full of derring-do, citadels, castles and ladies' chambers; and there were marketplaces, gaudy and gleaming in the sun, days of back-breaking labour, nights full of dancing and singing until dawn and the gay clatter of swordplay all into a box three feet by two and a half. Trurl presented this to Excelsius, to rule and have dominion over forever; but first he showed him where the input and output of his brand-new kingdom were, and how to programme wars, quell rebellions, exact tribute, collect taxes and also instructed him in the critical points and transition states of that microminiaturized society. The monarch saw that the kingdom was too small and looked like a child's toy; perhaps he also dully understood that size was not

**Figure 3**  
 The Spread and the Interconnectivity of the Indices of QoL Identified  
 Within the Scope of the Health Care Management Project in Tejgadh



what mattered here, for government is not measured in metres and kilograms, and emotions are somehow the same, whether experienced by giants or dwarfs (Lem 1974).

This short story became the inspiration for the development of Sim City, one of the most popular simulation and city-building personal computer game, first released in 1989 and designed by Will Wright. The objective of the game is to build and design a city with or without any specific goals to achieve. The game initiated the tradition of goal-centred, timed

scenarios that could be won or lost depending upon the performance of the player/mayor. The original cities were all based on real world cities and attempted to re-create their general layout. While most scenarios either take place in a fictional timeline or have a city under siege by a fictional disaster, a handful of available scenarios are based on actual historical events.

Given the statistical information available within the Encyclopedia of QoL, one can create scenarios for these already existing simulation games with real statistical information. The scenario could be initiated with the set of existing government policies and players would be given the right to modify policies in order to create an ideal village setting out of the existing ones or an ideal city. The game does not have to be creative in the sense of the graphics it entails. It could be a perfectly text-based interface taking input as changes in policy and giving output as changes in the indices of QoL. The algorithms to evaluate the effect of policy changes are already in place. Though one might have to account for the relative unpredictability of real-life situations, but the effects could be documented in a mathematically ideal world.

Proactive participation in governance, even within the ideal world of mathematics and probability, lies somewhere in between the realm of mass participation for policy making and leaving the policy decisions to an elected set of representatives. The policies of the best governed electronic worlds might be brought to implementation in the real world. Citizens could choose the best among the policies that govern the mathematical models of their cities and villages. Changes in real data in an electronically simulated environment probably might not correspond to changes in the real environment, but it creates a certain sense of responsibility and awareness among people. Gameplay to social responsibility is a long and tedious transformation, but a web-based information system that can help initiate it, would probably certify the long-standing McLuhan (1964) quote, ‘The medium is the message’.

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## CONTINUOUS PANCHAYAT

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The *Panchayat* is a large gathering of people assembled together to discuss the civic as well general affairs of a village. As a matter of fact it is probably the only truly democratic institution in India, where every person is allowed to participate under the supervision of the *Panchs* (presiding officers). It is the right to participate, the right to object, the right to criticize and of course, the right to be present at the *Panchayat* that makes it a uniquely dynamic institution. Theoretically, the right to information gives that privilege to every citizen of India. To question, object, criticize and be a part of the policy making endeavours of the government, though one has to realize that there is a general lack of awareness about the policy matters of any place.

An easily accessible electronic page that makes perfect sense even to a layman would probably solve the crisis of defunct participation. A continuous *Panchayat* borrows its ideals from the simple idea of participation which has worked in the open source movement. Linux and Wikipedia have been created out of mass participation. To place the combined statistical information within a visual construct to a game, offers a lot on the platter for participative motivation, especially when the results could possibly alter the QoL of the people around oneself.

A continuous *Panchayat* is a set of participating individuals, students, policy makers, teachers, any interested person in general who could monitor the government policies regarding the civic and general affairs of their village or city and create a certain sense of quality control when it comes to evaluating the efficiency of these policies. Trace out the progress of their region and create new possibilities of data gathering and validation. The group may be presided over by a set of mutually elected/selected presiding officers.

In the initial commentary on the Representation System, it was mentioned that looking at the change in information on the axis of time creates an understanding of the heuristics of development and policy making. The fact that one could look at predicting the changes in the indices of QoL to a certain mathematical probability with a new set of policies that are implemented, might create a platform for discussion on policy matters. This number game is not intended to threaten the existing system. It intends to make it more open-ended and affable to request for changes. This completes the circle of Figure 1 wherein at the end of the cycle, the policy after evaluation and critique generates another set of outcomes on the society which are captured with the next set of surveys. It also completes the cause and effect module, wherein the surveys cause a change in policies which in effect, causes a change in the content of the next set of surveys.

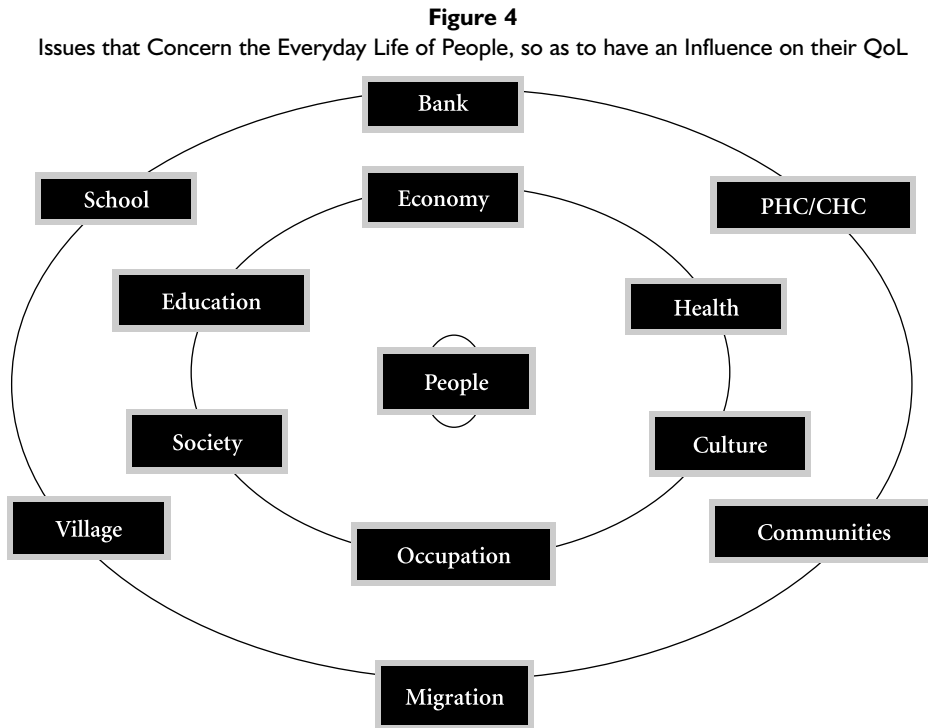
## CONCLUSION

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This article is more of a thought experiment with the initial set of assumptions being borrowed from a real case study. The project of health care management at Tejgadh is a work-in-progress. The survey forms have been created and the system is being developed using Microsoft Virtual Earth as a part of the basic system architecture. We have encountered problems with getting the exact longitudinal and latitudinal positions of villages in Vadodara, India and the rest of the data on these places except for the Primary Census Abstract and other tables provided by the Census of India.

In fact, the experiment began as a result of the difficulties we faced while creating this system. We had started with the initial assumption that health care is a more holistic approach

than just filing patient records. We focused on a variety of issues ranging from education, economy and health to infrastructure, culture and society. The solution was devised as a people-oriented system which would look at the tribal people as the main focus object. The rest revolves around the primary focus object. Figure 4 represents the approach towards a people-oriented system with the indices of quality of life revolving around the lives of people. The largest ellipse represents the structures that account for a specific index of quality of life, for example, School accounts of education among people.



The fact that we faced problems while assimilating this information together under one common platform made us realize that information about places is scattered over so many governmental departments and private institutions that there could possibly be no holistic perspective on the indices of QoL in a region. We have the right to information in place, but at the end of the day collecting information and collating them together requires a much more massive effort than a set of two individuals working on a project of digitizing patient records and surveys done by *Bhasha*.

The system that we have envisioned would work with proper inputs from a variety of sources. It might also create a foundation towards a more massively-participation-oriented-encyclopedic-maps of region under study. But one has to realize that the information that we talked about is our Fundamental Right assured by the Constitution of India. Given that the government could properly digitize its records and make its databases freely accessible, all that the game of policy and the encyclopedia of QoL would need is mass participation and awareness among people.

Communication in a generic sense entails the liability of knowledge. Transfer of technology has been a problem in India for quite a lot of time. People would not understand the relevance of such a system and the interface of a system which deals with such an enormous amount of statistical data would again be a complex problem to solve. But the encyclopedia of life has certain set of default page designs; Reebee Garofalo (Tufté 1997) managed to create a wonderful visual history of pop/rock music on a 36 × 20 inch poster encompassing the time period from 1955 to 1978, with more than 700 artists and 30 styles of music (Tufté 1997).

The liability of knowledge revolves around the fact that unless it is appreciated, contextualized and applied, it loses its meaning. The encyclopedia of QoL needs a game of policy because without the latter the former could never be fully appreciated. It is the tediousness of the enormity of data that has been captured while making that encyclopedia, which is neutralized in the playfulness of a game that has its origin around that information. The players constitute the *Panchayat*, the fact that they can review their own policies and cross-compare it with the ones formulated by the government who creates a different order of critique. One that is based on experience. Working on a simulation is not similar to a real-life problem, but it creates a certain sense of awareness that results into a feeling of social responsibility.

If one has to sit down and think about the ideas mentioned in the article, one could come up with enormous set of obstacles pushing the idea towards infeasibility. But we would like to conclude with Wilson's (2002) comments on the obstacles facing the encyclopedia of life. These obstacles are daunting, but they are of a technical nature eminently vulnerable to human ingenuity (Wilson 2002). To overcome them and thereby completing a panoramic view of a region in terms of every index of QoL conceivable to man, will secure the rightful place of democracy in governance.

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