Structuring Dialogue Between the People and Their Representatives

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Abstract. Conversations between citizens and their representatives may take a number of forms. In this paper, we consider one of these — letters between citizens and representatives — and explore the application of a well-known model of dialogue types to these. We provide a method to give these types a precise characterization in terms of the initial beliefs and desires of the participants, and then explore one type, persuasion dialogues. This work commences the formal modeling of citizen-representative interactions necessary for a fully electronic democracy.

1 Introduction

An important feature of a democracy is that those who rule should be accessible and accountable to those whom they rule. Citizens have the right to air their grievances and to seek justifications of policy from their Government, either by direct approach to the responsible Minister, or mediated through their elected representatives. Traditionally they exercise this right by writing letters. This correspondence is taken seriously and the Government organisation devotes considerable resource to replying to this correspondence. Can this process be made more effective by using electronic communication?

As with so many other aspects of Government, it is straightforward to offer some improvements by replicating the existing process in the context of currently available technology. Thus simply replacing the written letters by electronic mail will offer advantages of making access more direct and the exchange of views potentially faster. Additionally there is the potential for making the exchange of views more inclusive through mechanisms such as bulletin boards and discussion groups. Simply to replicate the current process, however, may fail to realise the potential advantages to the full. This lack of ambition can be seen in several areas addressed by e-government. Consider, for example, the use of forms. It is an easy matter to put the existing paper form onto the World Wide Web, giving ready access to the form and allowing immediate submission, while avoiding the problems associated with forms being out of stock, or outdated forms being issued. Thus there are clear gains. But many potential benefits are not realised by this approach. Forms create problems not only of availability, but also in their accurate completion. To take full advantage of the possibilities created by the new medium it is necessary to rethink the activity in the new context: what makes a good paper form, may not be what makes a good electronic form. As early as the late eighties Gilbert and his colleagues [3, 4], looked seriously at the notion of a specifically electronic form, with the intention of exploring, though a detailed study of form filling behaviour, what support could be provided for the form filler, and conducted a thorough evaluation on a prototype system. Particular problems arose from two areas: people tend to ignore much of the information, instructions and notes on the form, and people often become disorientated and fail to progress through the form in the correct sequence. Both these aspects were able to be addressed in the electronic form by making the form dynamic: information was presented only as and when it was needed, so that it was recognised as relevant and heeded, and the route through the form could be tightly controlled. The evaluation clearly demonstrated benefits: both subjective, in that people felt it was easier to complete the form, and objective, in that the forms were complete with increased accuracy.

The work on electronic forms provides a clear example of how technology can give real gains through an analysis of the behaviour of those engaged in the activity so as to identify opportunities for providing real support for the activity not available in the paper system. Are there similar benefits to be realised for correspondence with Ministers? First, we can point to the range of topics which be found in such correspondence. Examples (couched in terms of welfare benefits) are:

1. Requests for information about available help given particular circumstances: (e.g., I am a lone parent,[1] with a part time job and two children under five: what support can I get?).
2. Requests for advice about particular circumstances: (e.g., I am in receipt of such and such benefits, and have been offered a part time job. Is it in my interests to accept it?).
3. Requests for information about available help for a class of people: (e.g., what support is available for lone parents?).
4. Complaints about particular decisions: (e.g., why was I refused benefit?).
5. Suggestions for policy change: (e.g., Better child care facilities should be provided for working mothers).
6. Demands for explanation of policies: (e.g., Why can I get financial help to pay for child care, when I receive nothing if I choose to care for my own children?).

There are, of course, other kinds of question, but these examples serve to show some of the variety. Also a single letter may in fact raise a number of different questions. This variety suggest that we may not wish to treat correspondence as a single homogenous whole, but to provide a range of tools to support these different kinds of exchange.

Second, we can pay attention to how the exchanges are structured and expressed. A letter, being written in natural language, has advantages of expressiveness and flexibility, and can be used to communicate whatever can be communicated. On the other hand, this very flexibility carries with in disadvantages of vagueness, ambiguity and lack of clarity. The reader must interpret the document to determine what question is being asked, and must work to extract the facts and arguments presented. This offers

[1] A "lone parent" is a person with dependent children, not living with a partner.

considerable scope for misunderstanding, both of the original inquiry and the reply. Expressing an argument clearly and understanding it correctly are not an easy tasks.

Thus we see the role of an electronic tool as to facilitate communication and understanding both through clarifying the nature and intention of the exchange, and by assisting in the formulation and comprehension of the exchange. For this we draw on work aimed at supporting computer mediated dialogues. In section 2 we will recapitulate the work of Walton and Krabbe [11] on dialogue types, and present some additional analysis of our own which is intended to make these notions more precise and readily applicable. In section 3 we will focus on one particular dialogue type - persuasion - and present our work exploring the structure of persuasive dialogue. In the section 4 we will apply this work to the example of justifying a policy. Section 5 makes some concluding remarks.

2 Types of Dialogue

In [11], Walton and Krabbe have identified a number of distinct dialogue types used in human communication: Persuasion, Negotiation, Inquiry, Information-Seeking, Deliberation, and Eristic Dialogues. These types are characterised by their initial positions, main goal and the aims of the participants. They are summarised in Table 1.

Table 1. Types of Dialogue

Type	Initial Situation	Main Goal	Participants Aims
Persuasion	Conflicting points of view	Resolution of such conflicts by verbal means	Persuade the other(s)
Negotiation	Conflict of interests and need for cooperation	Making a deal	Get the best out of it for oneself
Inquiry	General ignorance	Growth of knowledge and agreement	Find a proof or destroy one
Info-seeking	Personal ignorance	Spreading knowledge and revealing positions	Gain, pass on, show or hide personal knowledge
Deliberation	Need for action	Reach a decision	Influence the outcome
Eristic Dialogue	Conflict and antagonism	Reaching an accommodation in a relationship	Strike the other party and win in the eyes of onlookers

We summarize the Walton and Krabbe descriptions as follows (in the order of [11]):

- A **Persuasion** dialogue involves an attempt by one participant to have another participant endorse some proposition or statement. The statement at issue may concern the beliefs of the participants or proposals for action, and the dialogue may or may not involve conflict between the participants. If the participants are guided only by the force of argument, then whichever participant has the more convincing argument, taking into account the burden of proof, should be able to persuade the other to endorse the statement at issue, or to give up the attempt.

- A **Negotiation** dialogue occurs when two or more parties attempt to jointly divide some resource (which may include the participants' own time or their respective capabilities to act), where the competing claims of the participants potentially cannot all be satisfied simultaneously. Here, co-operation is required by both parties in order to engage in the negotiation dialogue, but, at the same time, each participant is assumed to be seeking to achieve the best possible deal for him or herself.
- An **Inquiry** dialogue occurs when two or more participants, each being ignorant of the answer to some question, and each believing the others to be ignorant also, jointly seek to determine the answer. These dialogues do not start from a position of conflict, as no participant has taken a particular position on the question at issue; they are trying to find out some knowledge, and no one need resile from their existing beliefs. Aircraft disaster investigations may be seen as examples of Inquiry dialogues.
- An **Information-seeking** dialogue occurs when one party does not know the answer to some question, and believes (perhaps erroneously) that another party does so. The first party seeks to elicit the answer from the second by means of the dialogue. Expert consultation is a common important subtype of this type of dialogue. When the information sought concerns an action or course of action, we call this type of dialogue, a **plan-seeking** dialogue.
- A **Deliberation** dialogue occurs when two or more parties attempt to agree on an action, or a course of action, in some situation. The action may be performed by one or more the parties in the dialogue or by others not present. Here the participants share a responsibility to decide the action(s) to be undertaken in the circumstances, or, at least, they share a willingness to discuss whether they have such a shared responsibility.
- An **Eristic** dialogue is one where the participants vent perceived grievances, as in a quarrel, and the dialogue may act as a substitute for physical fighting. We do not consider this dialogue type further in this paper as we see it being beyond rational discourse.

Most human dialogues are in fact mixtures or combinations of these ideal types. For example a debate may contain persuasion, information-seeking and antagonism all at once, each embedded in the larger interaction. Moreover a dialogue may shift between types as it proceeds. With the exception of eristic dialogues, we have taken the above dialogue types as a starting point, and given a more precise characterisation to them. This is done using the initial beliefs and aims of the participants and the ways in which these can change in the course of the dialogue. This allows us to identify any shifts in the dialogue type, and the changes which the parties can make to reach agreement.

Tables 2, 3 and 4 show our analysis for three typical situations. Table 2 shows the possibilities where two party discuss their beliefs regarding a single proposition. Table 3 shows the possibilities when two parties discuss whether a particular action should be performed or not. Table 4 shows the situation where two parties discuss the performance of either, both or neither of two actions, which may be performed.

These tables model the space of all possible dialogue types appropriate to these situations. Representing the dialogues in this way leads to a number of observations relating to reaching agreement:

Table 2. Model of a Discussion Over Beliefs

A/B	p	¬ p	p ∨ ¬ p
p	Agreement	Disagreement or Persuasion	B info seeks A
¬ p	Disagreement or Persuasion	Agreement	B info seeks A
p ∨ ¬ p	A info seeks B	A info seeks B	Inquiry

Table 3. Model of a Discussion Over Actions

A/B	B does p	B does ¬ p	B does p ∨ ¬ p
A does p	Agreement	Disagreement or Persuasion	B plan seeks A
A does ¬ p	Disagreement or Persuasion	Agreement	B plan seeks A
A does p ∨ ¬ p	A plan seeks B	A plan seeks B	Deliberation

we can see the space of possible moves available to the participants;
we can see how agreement can be reached;
we can see how many changes are needed if agreement is to be reached;
we can see which participant must change if agreement is to be reached.

Table 4. Model of a Discussion Over Multiple Actions

	A does p ∧ q	A does p ∧¬ q	A does q ∧¬ p	A does ¬ p ∧¬ q	no opinion
A does p ∧ q	Agreement	Conflict or Persuasion	Conflict or Persuasion	Conflict or Negotiation	Plan seeking
A does p ∧¬ q	Conflict or Persuasion	Agreement	Conflict or Persuasion	Conflict or Persuasion	Plan seeking
A does q ∧¬ p	Conflict or Persuasion	Conflict or Persuasion	Agreement	Conflict or Persuasion	Plan seeking
A does ¬ p ∧¬ q	Conflict or Negotiation	Conflict or Persuasion	Conflict or Persuasion	Agreement	Plan seeking
no opinion	Plan seeking	Plan seeking	Plan seeking	Plan seeking	Deliberation

We can use tables 2, 3 and 4 to classify the example queries 1–6 in the Introduction.

1. In (1), the inquirer (B) does not know a piece of information, and the recipient (A) does. Thus, we are at the top right of table 2 and have an info-seeking dialogue.
2. In (2), the inquirer(A) wishes to know whether or not to perform an action, and (B) will have the answer. This puts us in one of the first two cells at the bottom of table 3, as here we have plan seeking, a sub-type of info-seeking.

3. (3) is similar to (1), even though it is of a general nature.
4. In (4), the recipient (A) did p, but the inquirer (B) believes that $\neg$ p should have been done, giving rise to a situation of disagreement, requiring persuasion, as in Table 3.
5. In (5), we assume that the recipient's (A) policy is $\neg$ p and the inquirer (B) wants p to be done so again, this gives rise to persuasion, again as in Table 3.
6. Finally, in (6), the recipient (A) is currently performing an action p, where the inquirer (B) wishes for $\neg$ p to be performed instead so, we are in the third cell of the second row in table 4, again giving rise to a persuasion dialogue.

We believe that providing the information in the form of these matrices gives a more structured and precise characterisation of the dialogue types than the informal descriptions of [11]. When the participants have a clear understanding of the gaps between their positions the task of deciding what shifts in position they should try to induce, or may need to make, is facilitated. Of course, whether a party is willing to change their position will depend on their other beliefs, and the utility they ascribe to actions and the states resulting from action. The structures, however, do provide a basis for forming strategies and heuristics to inform the conduct of the various types of dialogue.

3 Persuasive Dialogue

We have previously offered an account of argument intended to persuade someone that an action is justified [6, 7]. Here we summarise the important features of this account.

We see the key element in justifying an action as putting forward a position. This position comprises four elements: (a) The circumstances in which the action is performed; (b) The action itself; (c) The goal achieved by performing the action; and (d) The social values promoted by that goal. The position provides a justification, but in order to persuade it must be capable of being defended against attacks. There are a variety of ways in which a position can be attacked. We have identified fifteen different ways of attacking such a position [6], some of which have several variants. A persuasive dialogue is thus seen as a position being proposed, attacked and defended. In some cases persuasion may result, but often disagreement remains. In some cases the disagreement may result from a difference in factual belief: for example, the effects of a particular action may be disputed. In other cases the disagreement results from ethical choices: the disputants may differ as to the way in which they rate the social values promoted by an action. The key point is that conducting the dialogue in this way ensures that the argument is precisely stated, and that if disagreement remains, the exact points of difference can be located, so that what would be required for persuasion becomes clear, whether it is proof of some fact or causal mechanism, arguments designed to change the value order of the disputant, or even a new position which respects the opponent's ordering of values. A discussion can be found in [1, 2] of how persuasion is possible even when there is no consensus as to which values are desirable.

By using computer mediated dialogue to structure the attempt at persuasion according to this model we minimise the need for interpretation and the scope for misunderstanding by ensuring that:

- The position is fully and explicitly stated;
- Attacks on the position are stated unambiguously and precisely;
- Where there is residual disagreement, appropriate means are taken to resolve it, or identify any irreconcilable points making persuasion impossible.

4 Policy Justification as an Example

To illustrate the foregoing, we present an example of policy justification. Suppose the Government had a policy of paying for child care for lone parents, in order to enable them to take paid employment. This might be objected to as taking biasing the choice of lone parents to care for their own children rather than take paid employment. Justification of the policy could take a number of forms, for example:

a1. lone parents wish to work;
a2. providing child care for such parents;
a3. would enable them to work;
a4. providing job satisfaction and increasing gross national product.

Or:

b1. lone parents are poor because child care prevents them working;
b2. providing child care for such parents;
b3. would enable them to work;
b4. taking them and their children out of poverty;

Or:

c1. providing an acceptable level of support for all lone parents is too expensive; however we could afford to pay for their child care;
c2. providing child care for such parents;
c3. would enable them to work at acceptable cost;
c4. taking them and their children out of poverty and increasing gross national product.

There are probably other justifications. Each of these justifications makes different assumptions about the choices and aspirations of lone parents, and expresses different views on their attitude to work: justification *a.* values work for its intrinsic benefits, justification *b.* sees work primarily as a source of income, while justification *c.* relies on perceived economic constraints. All the arguments assume that lone parents will have no difficulty in finding acceptably remunerated employment. None rate the values relating to choice or the benefits to parent and child of parental care as significant. In unstructured prose it might well be hard to tell which of these justification was being advanced, and responders might find it hard themselves faced with a moving target. Given a clear statement of the justification, it is possible to formulate a precise response; perhaps directed at the assumptions, either in lines 1 or 3, or at the values in lines 4.

5 Concluding Remarks

In this paper we have considered the prospects for improving the quality of communication between the people and their representatives through electronic dialogues. We have done this by exploring one of the many ways in which citizens exercise their right to communicate with their political representatives, namely, letter-writing. Our approach is complementary to recent proposals for argumentation-based information systems to support deliberative decision-making over public policy questions, as in [5, 8, 9]. We stress the point that the use of technology often requires a rethinking of the existing process if the full benefits are to be achieved. Drawing on the work of Walton and Krabbe [11], we have identified a number of different dialogue types, and we have provided a method to give them a precise characterisation in terms of the initial beliefs and desires of the participants. We have further explored one of these, persuasion dialogues, providing a detailed model of persuasion which can be used as the basis for a computer mediated dialogue, and illustrated this with an example. In future work, we hope to be able to complement this model with models of other dialogue types, so that dialogues which shift between, embed, and combine different types may be appropriately represented. General formal approaches for combining dialogues of different types have already been developed by, e.g., McBurney and Parsons [10], and such approaches could readily be instantiated with particular models. Experience will show whether it is possible to build a system which is sufficiently usable by the general public: even if it is not, however, such a system would increase the effectiveness of debate between organisations such as pressure groups and lobbyists and the Government. We believe that our discussion provides evidence for potential improvements in the important matter of communication between people and their Government.

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