

## Welcoming address: “Mathematical concepts in politics”\*

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Dear Colleagues,

As the oldest living member of the Turkish mathematical physics community, I was asked by Prof. Nutku to make a short introductory talk, which was required to last fifteen minutes, not more, not less. Joking aside, it gives me great pleasure to greet you once more in Turkey, this time at the ninth Regional Conference on Mathematical Physics. I hope you will enjoy the meeting again and acquire in the hospitable atmosphere of Istanbul, new and fruitful ideas and also have the possibility to watch the last solar eclipse of this century on August 11.

These meetings were initiated in 1984 by our beloved colleague Abdus Salam and at the opening of the present one, I wish to pay a sincere tribute to his memory. I was lucky enough to have known him from the early days of his brilliant scientific career. He was not only an exceptionally creative and daring theoretical physicist, but also possessed a political genius which enabled him to bring into the world new and lasting international institutions, by inspiring and stimulating many people belonging to different nations. To give you an example of this side of his character, let me relate a secret he once told me. He was trying at that time to convince the delegates at the governing board of Unesco, that an international center for theoretical physics should be established at Trieste.

“When I proposed to the board of Unesco that an institute be created for the benefit of scientists coming mostly from developing countries, the delegates of developed nations objected saying that such a project is not feasible. So I had to convince them one by one. In this process, I discovered that the moment at which a person is most vulnerable to the proposals of other people is when he has just finished making a speech. Whenever I had the possibility of attending the meetings of the delegates of Unesco, I watched carefully and as soon as a delegate finished his speech, I rushed to him, congratulated him on

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his brilliant intervention and asked his support for my institute proposal. Under these circumstances, the delegate usually gave me a positive answer.”

With such ingenious methods and an inexhaustible energy, he was able to change the views of the delegates of the developed world and the international center was created.

In my remaining ten minutes I want to give you two examples on the application of mathematical ideas, not to physics, but to politics, as I have been engaged in political action in the past decade. These applications do not involve bona fide mathematical operations, but I am sure I could not have thought about them without my background in mathematical physics.

The first is concerned with the merger of two political parties. Let me call them parties A and B. If these parties have similar political aims (in our case, they were both social-democratic parties) and happen to compete for the vote of the same electoral basis, then their merger into one party will be beneficial for both of them, since it would eliminate the competition among them and allow their electorate to vote all together for their common candidates.

We had such a case in Turkey ten years ago. The party A had participated in the national elections of 1983 and had brought quite a few members to the Parliament, while B had not been allowed to take part in those elections and was not represented in the Parliament. On the other hand both A and B had participated in the local elections held all over the country in 1984 and in these elections, B had gained a popular support of the order of 22 % against a popular support of 8 % for A. Therefore, at the time when a merger was being considered, A had parliamentary strength without a proportional national support while B had considerable national strength without proportional representation in the Parliament. In this situation, a merger, in order to be profitable, had to be carried out in such a way as to safeguard the respective strengths of the two parties. But this aim seemed nearly impossible to reach because of legal and political difficulties. Let me explain this in more detail:

- The union of the parties A and B can be achieved in one of the following three ways:
  1. The members of A can declare their party closed and then join B.
  2. The members of B can declare their party closed and then join A.
  3. The members of both parties can close their parties and come together to form a new party C.

In our case there existed legal obstacles to the realization of cases 1 and 3. According to the constitution, if the party A were closed, then their deputies would lose their status in the Parliament. Furthermore as another consequence, the financial support of the state to the party A would disappear. On the other hand, to close B for joining A was politically unacceptable since it would mean losing the large popular support enjoyed by B.

According to all political observers and press commentators, the dilemma appeared to be insoluble. Then it occurred to me that a solution taken from mathematics was possible.

A transformation could be applied to the party A, which, without closing it down legally, could turn it effectively into B, by changing its program and by-laws accordingly. After this transformation is achieved, the members of B could join A, without losing their popular support, since the political character of B remained unchanged. Therefore all the obstacles would be surmounted in this way. When this solution was proposed, it was immediately accepted by all and the merger was achieved thanks to this transformation inspired from mathematics.

My second example is a more recent one. On the basis of my experiences, I was asked a few months ago to give a talk to a politically motivated group which included some distinguished political scientists. The subject proposed was, "ethics in politics". This is a very old subject on which philosophers, social and political scientists have written many pages in the past. So, at first I was at a loss to find something new for this expert audience. Again, a mathematical approach came to my rescue. I realized that in political action there is a structural characteristic which differentiates it from individual action and leads to important consequences for ethics in politics as well as for many other areas. The relationship which exists between a politician and the people is of the type one-to-many, while the usual relationship between individuals is one-to-one.

Consider how individuals may violate the moral code in society. One person may lie to another, or make a promise and not keep it, or steal money from some one else, etc... All these actions involve relationships between two persons. Whether or not a person acts according to the moral code depends only on his or her decision, since the actions required to satisfy the moral code are all within the capacity of the individuals. A person usually does not need extra power to fulfill the promise. The standards of the moral code are established for individuals engaged in one-to-one relationships with the implicit assumption that the persons concerned possess the physical power needed to carry out their decisions.

On the other hand, when a politician makes a speech, many people listen to him or her and every one of them interpret the speech in a different way, their reactions are different from each other. When a politician proposes a certain change in a given law, many people will be affected by this action. If the state funds are misused by a politician, again many people will suffer from the consequences. In all these cases we have a one-to-many relationship. Furthermore, in order to carry out his promises, the politician has to have sufficient political power. This power may or may not be acquired in due time.

Consideration of the structure of these one-to-many relationships which brings the power factor into play, enables us to understand some puzzling aspects of ethics in politics, e.g. why, compared with individual behavior, we assess actions of politicians sometime with more, sometime with less tolerance. But I don't have time to go into details, I must stop now and let you return to mathematical physics.