

WORK ON RESOLVING ISRAELI-PALESTINIAN CONFLICT

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ABSTRACT

Professor Thomas L. Saaty is a world-renowned Operations Research (OR) scientist. His death has created a vacuum which can hardly be filled. His absence in scholastic writing in the field of MCDM will be widely felt for a long time. The world of OR will remember him not only as a mathematician, originator of AHP and ANP, but also as a good human being. He has numerous contributions in the field of OR, particularly MCDM. In the present article, I have highlighted his wonderful contribution in resolving the decades-long Israeli-Palestinian conflict.

Keywords: Israeli-Palestinian conflict; Analytic Hierarchy Process; Thomas L. Saaty

1. Introduction

Thomas L. Saaty was a born-genius, and is one of the very few individuals I admire the most. I have seen his love towards humanity. He is unique. It is amazing how a mathematician can be so well-versed in so many other areas of knowledge. I have read many of his articles, most of which are theoretical in nature as they deal with AHP methodology itself. However, he has also written numerous application papers that cover diverse areas including management, education, sociology, transportation, energy planning, human resource management, conflict resolution and the list goes on. In this article, I will briefly highlight his work on conflict resolution, especially referring to the Israeli-Palestinian conflict (Saaty & Zoffer, 2011).

In 1977, Professor Saaty developed the Analytic Hierarchy Process (AHP) and the paper was published in the *Journal of Mathematical Psychology* (Saaty, 1977). This is not a very well-known journal, at least within the management community. At the time he introduced it, he might not have anticipated how powerful the method would be in solving so many problems in such diverse areas. This is where Tom's success lies*. The quantum and magnitude of AHP applications are simply marvellous.

* I prefer to refer Professor Thomas L. Saaty as Tom. In fact, to maintain decorum, I used to address him as Professor Saaty, but one day he asked me, "Rafikul, when are we going to be friends? Just call me Tom!"

Tom once fondly advised me to promote AHP to politicians; he said, “It is they who need more applications of AHP”. He always wanted to see a world where everybody was living peacefully and symbiotically. We chose, “Better World Through Better Decision Making” as the theme of the 12th International Symposium on the AHP held in Kuala Lumpur in 2013. Tom could not attend the meeting due to health reasons, but as a chairman I requested that he write a paper on the theme which he promptly did. The paper is available at <http://www.mim.org.my/wp-content/uploads/2016/03/MMRSampleArticle.pdf>. In our personal meetings, Tom often used to say how worried he was about the ongoing conflicts in many parts of the world. Once, I said to him that the root cause was the Israeli-Palestinian conflict, and he agreed.

2. Israeli-Palestinian conflict

One of the most complicated and devastating conflicts that the human race has witnessed throughout history is the Israeli-Palestinian conflict which has raged on both sides for the last six decades. Numerous people, including high profile politicians of powerful nations in the world, have conducted countless meetings/sessions to talk through the much-needed solutions that would be acceptable to both sides. However, in practicality, these solutions were not fully acceptable to either party as many important intangible factors had not been included in the solution. No scientific method had been applied to make a rational trade-off between costs and benefits for both sides. The AHP fills the much-needed gap in this area.

The Israeli–Palestinian conflict is a prolonged and interminable struggle between parties committed to unyielding positions related to identity, religion and territory. Further, the conflict has been compounded by great power rivalries, weapon sales, and economic and social disparities. Some of the world’s best negotiators, diplomats and leaders have grappled with the resolution of this conflict. However, despite their best efforts, the current condition continues to torment all the parties (Israel and Palestine). Where is the end? Let’s have a fresh look. It is possible to look at resolutions from a purely scientific angle. The AHP approach, however, does not guarantee the resolution of the crisis; this requires proper implementation by fully committed parties.

To address any kind of human conflict, intangible factors must be dealt with. The usual face-to-face discussions over the negotiation table are often marred by emotionally charged participants, and emotions often prevail over human reasoning. Why have countless numbers of meeting deliberations failed to see a lasting solution? It is partly because people have not generated enough kinds of concessions, and have not traded them off properly. This is where AHP can play an important role. The AHP solution process cannot replace the formal face-to-face negotiation process; rather AHP findings can supplement the formal negotiation process. Saaty & Zoffer (2011) write:

This initiative only sought to test the AHP methodology on a problem that previously evaded resolution... However, it was agreed that the work is exploratory in nature and intended to demonstrate how the method can be used

over a short period of time to arrive at a process that moves the negotiation process forward (p. 13).

A successful solution derived by a scientific process depends upon the implementation of the recommendation. The implementation team must recognise the value of AHP findings, especially the priorities of the concessions made by both the parties.

Briefly, AHP requires carrying out the following three tasks:

1. Decompose the complex decision making problem into specific manageable items. One of the items should be defining the goal of the problem. In the present case, the goal is, "Achieving a consensus peace accord between Israelis and Palestinians." Place similar items into groups, then a hierarchy should be constructed with all similar items placed in a particular level. Regarding the decomposition, Saaty & Zoffer write (2011):

Logical thinking is linear and deals with issues one at a time starting with assumptions and drawing conclusions. It involves many such repetitions of cause and effect thinking but then has no way to combine the many conclusions into a single overall outcome, except by making new assumptions not included in the original considerations. Decomposing the segments takes advantage of human linear thinking to focus our attention on pairwise comparisons, a much simpler way of accurately assessing interaction. Even if individual judgment may be less than accurate, such errors are compensated for by the quantity of judgments that are made. In a sense, an appropriate analogy would be trying to explain exactly how the pieces of a machine work together as a system, without understanding what the relationship of each part of that machine is to another. (p. 62)

Referring to the Israeli-Palestinian conflict Saaty & Zoffer write (2011):

In laying out the framework for conflict resolution, one needs to sort the elements into groupings or clusters that have similar influences or effects. One must also

arrange them in some rational order to trace the outcome of these influences. One then constructs a hierarchy of several levels. (p. 8)

2. Perform pairwise comparisons for the elements belonging to one specific level with respect to a common element occupying the immediate higher level in the hierarchy. The pairwise comparisons for every possible pair ensure the exactness and validity of the priorities that are generated.
3. Synthesize all the “local” priorities to obtain the overall priorities of the elements belonging to the last level of the hierarchy.

It is to be noted that Saaty and Zoffer applied both the relative and absolute measurement process of AHP for the Israeli-Palestinian conflict. Harvard psychologist Arthur Blumenthal, cited in Saaty & Zoffer (2011), wrote:

Comparative judgment, which is the identification of some relation between two stimuli both present to the observer, and absolute judgment, which involves the relation between a single stimulus and some information held in short term memory about some former comparison stimuli or about some previously experienced measurement scale with which the observer rates the single stimulus. (p. 23)

Blumenthal’s observation is confirmed by the way people do rankings. Saaty & Zoffer (2011) wrote:

They (people) either compare things with each other, or rate them one at a time with respect to a standard they have in mind. When things are intangible, as the issues are in the Middle East conflict, they must be compared. On the other hand, the concessions or the alternatives of any decision can be rated one at a time because they can be numerous, which makes it time consuming to compare them in pairs. (p. 23)

3. The process

Resolving the Israeli-Palestinian conflict was close to the heart of Tom. He and Jerry Zoffer managed to secure some grants from the David Berg Foundation of New York and from their own University of Pittsburgh to invite participants from Israel as well as Palestine to meetings. Two meetings took place, one in June 2009 and the other in March 2010. Each meeting spanned over 3 days with comprehensive discussions, deliberations and negotiations. Tom decided to change the participants of half of the group in the second meeting to see further fresh ideas on the conflict. These meetings took place before the Saaty & Zoffer (2011) paper was written. They went on to hold four more meetings after that, with the last being held in September 2017 after Tom passed away. The detailed work that came from these meetings that defined the possible trade-offs were so valuable that their lists and marked-up maps were requested by the U.S. State Department. It would be remiss not to mention the valuable work of Professor Luis Vargas of the University of Pittsburgh who facilitated all the meetings, built the AHP models, built the trade-off model used to lead the participants toward a compromised solution that they considered a win-win- equitable solution. He was a co-author with Saaty and Zoffer on subsequent papers.

Saaty & Zoffer (2011) stated the objectives of this special face-to-face meeting between the Israelis and Palestinians as follows:

- To identify the issues, major and minor, and to examine the relative significance or priority of the issues currently inhibiting solution of the Israeli-Palestinian conflict
- To share knowledge and insights about the current Israeli-Palestinian situation from different points of view
- To construct a comprehensive model of the situation
- To explore the benefits and costs of alternative courses of action

All the participants were well-versed about the conflict, but they were briefed about the AHP method. Initially, the group generated many issues regarding the conflict. Later, criteria were obtained from these issues. Saaty & Zoffer (2011) write:

We consider each party's list of issues, which if addressed by the other party by making concessions, would provide sufficient benefit to that side toward meeting their goal. They, in turn, would be willing to make concessions to the other side to balance those concessions with an equivalent trade-off. We refer to these issues as criteria. (p. 9)

The goal was to find the lasting solution to end the decades-long conflict. The crux of the deliberation process was the generation of concessions from the Israeli as well as the Palestinian point of view. Without concessions by both parties, it is unlikely that a conflict such as this can be resolved. If Palestinians make some concessions to the Israelis, it will benefit the Israelis but at the cost of Palestinians. The same applies the other way around. Understandably, some of the benefits and costs are intangibles. These

must be quantified to reach a meaningful conclusion. AHP can elegantly do the job using its inherent 1-9 fundamental scale. Saaty & Zoffer write (2011):

It is to be noted that when we speak of measurement, we are not only referring to tangibles like length, mass, time, or money, but also to intangibles like political and social influence and of the diversity of emotions like love and hate, religious ideology, participant's attitude, and quality-of -performance, to name just a few that are within the boundaries of current thinking. AHP solves an age-old problem of decision makers only being able to measure accurately tangible factors with mere mention of intangibles where no measurement instruments were available. This process can be used not only to measure but also to integrate all factors, tangible and intangible, and provide a comparable scale that permits combining and trading them off. (p. 10)

Bringing people from both sides to a discussion table is not new. In fact, concessions have already been generated in a number of U.S.-brokered peace deals. But what is new in the AHP discussion session was the evaluation of the concessions based on economic, social, geographic, humanitarian and historical ground. Saaty and Zoffer leveraged the strengths of AHP and the fast-hand knowledge of the participants in the conflict to arrive at a scientific solution.

The Israeli-Palestinian conflict is unique in length as well as breadth. There are countless concerns that surround the conflict. Within a 3-day meeting, it is nearly impossible to pin everything down, so the groups decided to limit their attention to certain concerns. Interestingly, there was unanimous agreement on the nature of the conflict. Debates surfaced, however, on the concerns. These concerns differed according to which constituent group was putting them forward. Saaty & Zoffer write (2011):

For example, among the Palestinian key constituents are Palestinian refugees, Hamas followers, Fatah followers, Palestinians who still live in Israel, and Diaspora Palestinians. Among the Israeli constituents are the ultra-right orthodox community, Israelis living in settlements in the West Bank, those associated with the Likud movement, those associated with the Labor Party, and those more

actively seeking peace as a primary objective, without dwelling on the details of it. (p. 12)

The model they laid out cut across the visible as well as the invisible boundaries between the two parties. The application has clearly shown the versatility of AHP, especially in proposing solutions to end the world's most deliberated conflict. But it must be admitted that AHP propositions are not the end-in-itself. Saaty & Zoffer (2011) write, "We need to begin by emphasizing that the outcome of our effort is a beginning of an elaborate undertaking to produce a viable solution to the Israeli–Palestinian conflict." (p. 6)

The present application of AHP requires assessments of the benefits, costs, perceived benefits and perceived costs of the proposed trade-offs. This can be done by answering a series of questions that include: which benefits are more important than others?, which consequences weight more heavily than others?, and what scenarios are likely to take place?

As mentioned before, the hierarchy consisted of several levels: the overall goal, and a set of criteria that captures the values represented by the goal. The concessions (trade-offs) occupying level 3 are evaluated with respect to the criteria to determine their priorities in serving the goal. A representative hierarchy is shown in Figure 1.

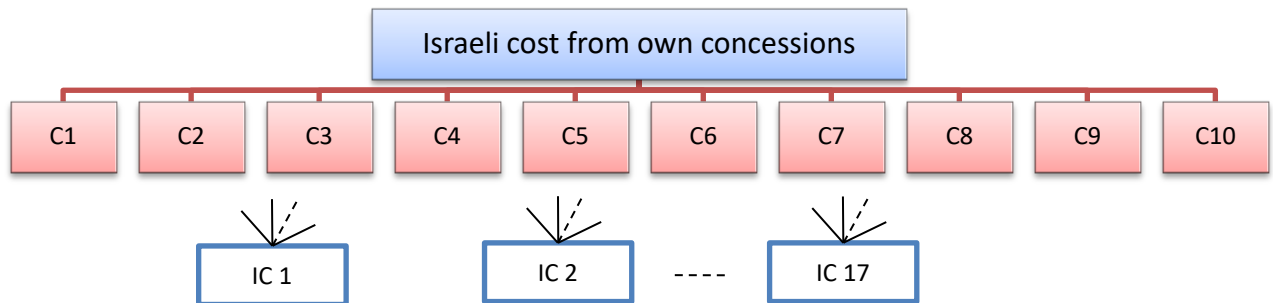


Figure 1: A partial hierarchy of the Israeli-Palestinian conflict

Legend:

- C1: Integrity and unity of Israeli society post agreement
- C2: Security
- C3: Strengthening the alliance with the United States
- C4: Make Israel more attractive to Jewish diaspora and Israeli citizens
- C5: End of claims and end of conflict
- C6: Legitimization of the state of Israel
- C7: Stop being occupiers
- C8: Peace, economy and stability in region
- C9: Maintain the Jewish majority of Israel alongside the Arab minority
- C10: Weakening the radical forces in the Middle East headed by Iran

Israeli's Concessions Description

- IC 1 Abandon the idea of a Jewish state
- IC 2 Accept Palestinian full control of the borders of the Palestinian state and its outlets
- IC 3 Accept the historical responsibility for the Palestinian refugee problem
- IC 4 Accept the Palestinian refugees' right to return
- IC 5 Accept to abide by the status quo in the holy places in Jerusalem
- IC 6 Accept to abolish the law of return
- IC 7 Accept to respect the integrity of the West Bank and Gaza by allowing free and safe passage between the two areas
- IC 8 Accept East Jerusalem as the capital of the Palestinian state
- IC 9 Accept a two-state solution on the borders of June 4, 1967
- IC 10 Allow all parties to have equal access to and control of religious sites and holy places
- IC 11 Allow the sharing of all natural resources between Palestinians and Israelis
- IC 12 Comply with all applicable UN resolutions
- IC 13 Evacuate settlers of Jewish settlements on land claimed by the Palestinians with or without compensation
- IC 14 Release all political prisoners, including those who are Israeli citizens
- IC 15 Share Jerusalem as two capitals of two states
- IC 16 Solve the Palestinian refugee problem in a just and agreed-upon manner
- IC 17 Stop incitement by the religious and national education and religious leaders in Israel against Muslims and Arabs and guarantee the rights of Israeli minorities

To deal with the Israeli-Palestinian conflict, Saaty and Zoffer took a retributive conflict resolution approach that takes into consideration the benefits to A from concessions by B and the costs to A of the return concessions A makes as well as A's perception of the benefits B gets from the concessions A makes, and of the costs to B of the concessions B makes. Similar considerations are made from B's perspective.

The concept of retributive function is used in synthesizing the outcomes (profits and costs) of the concessions made by both parties. Let us consider two parties named A and B. In the negotiation process, A considers a concession from B not only with respect to the benefit to A but also the costs to B in providing the concession. A not only wants to gain from concessions made by B, but wants to ensure, because of the retributive nature of the long-standing conflict, that they cost B, or inflict some pain on B, which might be non-monetary, as well. Therefore, A's gain from a concession provided by B is described by taking the product of A's benefits and B's costs.

Hence, we have:

$$\begin{aligned}
 \text{A's ratio} &= \frac{\text{Gain to A from B's concession}}{\text{A's perception of B's gain from A's concession}} \\
 &= \frac{\sum \text{A's benefits} \times \text{B's costs from B's concession}}{\sum \text{B's perceived benefits} \times \text{A's costs from A's concession}} \\
 &= \frac{\text{Gain to A}}{\text{Loss to B}}
 \end{aligned}$$

In a similar way, B's ratio can be defined. Finally, measure of equality between the parties in the trade of concessions may be calculated as

$$\frac{\text{A's ratio}}{\text{B's ratio}} = \text{Retributive gain (loss) to A}$$

Ideally, we seek a solution by investigating how closely matched are gain-to-loss ratios of concessions and how to trade them off in such a way that neither side's ratio is much less than that of the other. Tom and Zoffer (2011) commented:

In fact, there is usually more than one solution to complex negotiations. What is needed is a degree of moderation on both sides that makes it possible for the gain-to-loss ratios to be sufficiently close for trade-offs against each other. (p. 46)

Table 1 shows the gain/loss ratios derived for the selected concessions given by Israelis and Palestinians.

Table 1
Matching concessions with corresponding gain/loss ratios in second meeting

Israeli's Concessions	Gain/Loss	Palestinian's Concessions	Gain/Loss
Adhere to International law		Accept two-state solution (Israeli control of Jerusalem)	
Right to education	1083	Adhere to International law	1084
Comply with UN resolutions		Accept a demilitarized Palestinian state (not including Jerusalem)	
Right to a free economy, economic development & trade	461	End of incitement of anti-Israeli sentiment in school	457
Accept UN declaration of human rights		Free access, safety, and movement of Israelis in Palestinian territory	
Removal of Wall & other barriers	1008	Renounce & reign-in violence	1016
Respect the territorial integrity of Gaza and West Bank		Acceptance of non-contiguous Palestinian state	
Shared administration of resources	2.46	Allow Jewish settlers to stay in Judea and Samaria with Israeli citizenship and under Israeli law	2.47
Palestinian control of own natural resources		Accept sharing of natural resources	
Shared Jerusalem		Drop opposition to trade & normal relations with Israel	
Turnover settlement with or without compensation	4.26	Work cooperatively with Israel	4.23
Total	2558.72		2563.7

The gain/loss ratios were estimated through a series of ratings exercises. Table 2 provides a sample of the Israeli concession ratings relative to the criteria set.

Table 2
Israeli concession ratings relative to criteria (Israeli benefits from Palestinian concessions)

Concessions	Control Jerusalem & holy places (0.245)	Refugee compensation & settlement (0.251)	Increasing security (0.193)	Permanent borders (0.000)	Controlling & rationing of water (0.162)	Human Rights (0.022)	Settlements in Palestinian territory (0.127)	Total	Ideals
Accept two-state solution	Very low	Excellent	Excellent	-	Negligible	-	Medium	0.680	0.736
Acceptance of non-contiguous state	Negligible	Excellent	Excellent	-	Negligible	-	Negligible	0.605	0.655
Acknowledge Israel's existence as a Jewish state	Excellent	Excellent	Excellent	-	Very High	-	Medium	0.924	1.000
Acknowledge Israel's existence as an independent state	Medium	High	High	-	Very High	-	Medium	0.762	0.824
Agree to compromise to demand of right of no return	High	Excellent	Excellent	-	Excellent	-	Very High	0.917	0.992
Declare against Iranian nuclear development	-	-	-	-	-	-	-	0.000	0.000
Drop opposition to trade & normal relations with Israel	Negligible	Very low	Very low	-	Negligible	-	High	0.402	0.435
Incitement of anti-Israeli sentiment in school	Excellent	Excellent	Excellent	-	Negligible	-	Very High	0.853	0.923
Lobby Arab states to allow Israelis right to return	-	-	-	-	-	-	-	0.000	0.000
Make compromise on the status of Jerusalem	Excellent	Low	Excellent	-	-	-	Medium	0.653	0.707
Denounce & reign-in violence	Excellent	Very Low	Excellent	-	High	-	Excellent	0.795	0.860
Seek assistance for a legitimate settlement of refugees	Negligible	Excellent	Excellent	-	-	-	Negligible	0.556	0.602
Sharing of natural resources	Negligible	Very Low	Medium	-	Negligible	-	High	0.459	0.497
Work cooperatively with Israel	Negligible	Very High	Very Low	-	Very High	-	Negligible	0.677	0.732

The present application of AHP in resolving the Israeli-Palestinian conflict has many matrices of priorities. As a sample, Table 3 shows various priorities for Israeli concessions.

Table 3
Priorities derived for Israeli's concessions

Concessions	Israeli's Costs	Israeli's Perception of Palestinian's Benefits	Israeli's Total Loss	Palestinian's Benefits	Palestinian's Perception of Israel's Costs	Palestinian's Total Gain
	(1)	(2)	(1)*(2)*1 000	(3)	(4)	(3)*(4)*100 0
1	1	1	1000.00	0.8830	0.9683	855.03
2	0.6445	0.7637	492.18	0.9894	0.9717	961.31
3	0.9051	0.2705	244.88	0.9574	0.7835	750.15
4	0.9470	0.8253	781.53	0.8830	0.9515	840.11
5	0.1961	0.5405	106.01	0.7979	0.7583	605.05
6	0.8824	0.4280	377.70	0.5426	0.7410	402.01
7	0.1984	0.5149	102.15	0.9787	0.9054	886.12
8	0.8299	0.8068	669.54	1	0.9692	969.17
9	0.0545	0.8205	44.75	0.9787	0.9080	888.67
10	0.1006	0.5323	53.55	0.8085	0.5459	441.41
11	0.1120	0.2853	31.96	0.6702	0.5260	352.52
12	0.8596	0.9571	822.76	0.9787	0.9075	888.20
13	0.3593	0.8915	320.31	0.9255	1	925.53
14	0.5178	0.4781	247.56	0.7553	0.6508	491.59
15	0.1633	0.6027	98.42	0.8511	0.7334	624.17
16	0.1806	0.7329	132.34	0.8830	0.9174	810.08
17	0.0741	0.1110	8.23	0.4149	0.4991	207.05

The session concluded with the following resolutions known as “the Pittsburgh principles”.

1. A Two-State solution on the borders of the 4th of June 1967, with mutually agreed upon land swaps.
2. Israel must respect the integrity of the West Bank and Gaza by allowing free and safe passage between the two areas, and the Palestinian State must guarantee that any agreement reached with Israel will be accepted and supported by the majority of the Palestinian people both in Gaza and the West Bank.
3. East Jerusalem will be the capital of the Palestinian State. The parties will maintain the Status Quo of the Holy places in Jerusalem.
4. Acknowledge Israel's Existence as a Jewish State without jeopardizing the rights of its minority Israeli citizens.
5. Evacuation of Israeli settlers from the Palestinian territories that are not included in the land swaps.
6. Palestinian full control of the borders of the Palestinian State and its outlets, and deployment of a temporary agreed upon multinational military monitoring system in the Jordan Valley.

7. Solve the Palestinian refugee problem in a just and agreed upon manner.
8. A demilitarized Palestinian State.
9. Agreed upon international monitoring mechanism and agreed upon binding international arbitration mechanisms.
10. The full implementation of these principles will conclude the conflict and the address the claims of the two parties.

4. Conclusion

Numerous negotiations and peace meetings have been conducted to resolve the decades-long, extremely complicated conflict between the Israelis and Palestinians. The world has, however, seen no tangible positive output coming from those prolonged sessions. There could be several reasons for this, one of which includes an inflexible mind set for both parties when the time to implement the proposed solution comes. Both sides have some concessions that are non-negotiable, e.g., the Israelis do not want to allow the Palestinian refugees to return to their homeland; on the other hand, the Palestinians refusal (especially Hamas) to acknowledge the existence of a full-fledged Jewish state. Further, to fully implement the proposed solution, one needs to ensure the participation of all the stakeholders when formulating the policy. Excluding one sizeable party, which has a tremendous stake in the conflict, will only cause lasting peace to elude the people in the region. Nevertheless, a highly commendable effort has been undertaken by Saaty and Zoffer to rekindle the hope of a peace in the region. As mentioned before, AHP will not replace the formal peace negotiation process; rather it supplements and supports the process. AHP findings must be used by politicians to push the peace process forward.

Let me make some concluding remarks about the AHP application to the conflict.

- (1) A major outcome of the process is the identification of 106 issues and numerous concessions pertaining to the conflict. Note that this happened because of the spontaneous participation of both parties in a friendly atmosphere.
- (2) All the concessions were prioritized strictly based upon their desirability using a scientific method, the AHP, to solicit judgments from the parties.
- (3) AHP has shown how human judgments, emotions, feelings, aspirations can all be combined in a holistic manner resulting in deriving priorities for the concessions.
- (4) The AHP exercise made it possible for the participants to consider a wide variety of potential trade-offs. The beauty of the process is that it favoured neither side.

The main advantages of applying the AHP in this conflict are summarized below (Saaty & Zoffer, 2011):

AHP facilitates conflict resolution by organizing perceptions, feelings, judgements and memories into a framework that exhibits the forces that influence judgement and their priority outcomes. (p.8) The traditional approach involving diplomacy and face to face negotiations has led to an inconclusive outcome, partially attributable to attitudes colored by strong emotions on both sides. Our

approach attempts to address the impact of negative attitudes by focusing the participants on making judgments that measure the intensity of their perceptions about the influences that each of the issues brings to bear upon the final outcome. (p.9) No other approach provides an opportunity for priorities to be identified which organize the issues and concessions in a way that cannot occur when only face to face negotiations are being conducted. The priorities provide a perspective that allows negotiators to grasp the role or relative importance which each issue or concession plays in the total conflict. The chaos which has characterized much of the past 60 years of face to face and of shuttle negotiations is minimized as a result of the organized approach which is intrinsic to the AHP process. (p.12)

May the AHP's resolutions be instrumental in resolving the Israeli-Palestinian conflict permanently! That would be a fitting tribute to Tom for his work.

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