Chapter 8
The paradox of the peacemaker

There is a phenomenon that politicians often observe but do not like to mention: attempts to reconcile conflicting groups often lead to intensification of strain rather than alleviation of the conflict. We will show how our model explains this phenomenon.

8.1. Specifying the concept of influence

Prior to examining in detail the phenomenon mentioned above, we need to define the concept of *influence*, which is broadly used in the framework of our theoretical model. One subject persuades or pressures the other to do something or provokes the other in some way. Or, by some peculiarity, one subject unintentionally inclines the other to perform certain actions; for example, by being weak, he provokes a military attack, or, *vice versa*, by seeming to be strong, provokes retreat without even the need of threats. Thus, subjects may influence each other in arbitrary ways. In the subject's mental domain, the influence of two subjects in a state of cooperation corresponds to the intersection of their individual influences, and the influence of those in conflict to the union of their influences. In other words, we assume that the subject's "mind" perceives the influence of "two friends" as the result of consensus, and the influence of "two adversaries" as the absence of consensus, independently of whether these influences are intentional or not.

In speaking about peacemakers, we will assume that they may incline conflicting parties either to refrain from violence or to use it. The latter does not mean that peacemakers deliberately induce subjects to violent actions; rather, the methods suggested by peacemakers to stop violence may paradoxically lead to more violence. For example, the advice to withdraw troops from a certain region may prompt the residents of that region to rise up in

rebellion against the occupiers. We will assume that peacemakers are in relation of cooperation with each member of the conflicting groups, and that among themselves they may be either in a relation of cooperation or in one of conflict.

In our schema, each subject in a conflicting group is in a relation of cooperation with every other subject of the same group and faces a choice between (1) - using violence and (0) - not using violence against members of the other group. The peacemaker also has two alternatives: (1) - to use incentives or (0) - to use punishment. For example, some groups receive economic support and their leaders are given awards, while other groups' economic support is reduced and their leaders are replaced by political competitors.

Every subject in a conflict inclines other subjects to choose one of the alternatives described above and inclines the peacemaker toward using either incentives or punishment.

Let us emphasize: religious or national conflicts may have existed for centuries. The peacemakers' influence, in these cases, is directed not so much toward replacing "conflict" by "cooperation" as toward halting the violence. We will assume that relations among subjects do not change due to the peacemaker's intervention.

8.2. Conflict between two groups of two subjects each

Let the allied countries c and d be in conflict with the allied countries e and f. The graph in Fig.8.2.1 depicts this situation:

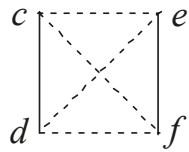

Fig. 8.2.1. Graph of relations in a group of two pairs of allies in conflict with each other.

This graph is decomposable; it corresponds to the polynomial

$$cd + ef \tag{8.2.1}$$

and the diagonal form

$$\begin{array}{ccccc} & & [c]\,[d] & & [e]\,[f] \\ & [cd] & & + & [ef] \\ [cd + ef] & & & & \end{array} . \tag{8.2.2}$$

Let the subjects choose alternatives from set $M = \{1, 0\}$, where 1 means to use violence and 0 – not to use it. The diagonal form (8.2.2) corresponds to equations of the type $x = cd + ef$, where $x = c, d, e, f$:

$$c = cd + ef,$$

$$d = cd + ef,$$

$$e = cd + ef,$$

$$f = cd + ef.$$

Let the subjects' influences on each other be as follows (Table 8.2.1):

Table 8.2.1
Matrix of influences

	c	d	e	f
c	c	1	0	0
d	1	d	0	0
e	0	0	e	1
f	0	0	1	f

The values of variables are taken from this table: from column c for the first equation, from column d for the second

equation, from column e for the third equation, and from column f for the fourth equation. As a result we obtain the equations

$$c = c,\ d = d,\ e = e,\ f = f.$$

We see that subjects c, d, e and f have freedom of choice, i.e., each of them can choose either 1 - (violence) or 0 - (restraint). If all of them choose 0, it would mean that the situation is resolved and the violence stopped without any participation by peacemakers.

Let us investigate what happens if a peacemaker a, in a state of cooperation with all parties, joins the situation (Fig. 8.2.2). The peacemaker inclines each subject either to violence or to refrain from violence. Also, the peacemaker makes decisions: to encourage or to reprimand the various parties to the conflict.

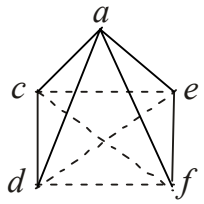

Fig. 8.2.2. Group with a peacemaker

This graph is decomposable; it corresponds to the polynomial

$$a(cd + ef) \tag{8.2.3}$$

and the diagonal form

$$\begin{array}{c} [c]\,[d] \qquad [e]\,[f] \\ [cd] \qquad + [ef] \\ [a]\,[cd + ef] \\ [a(cd + ef)] \end{array} , \tag{8.2.4}$$

which is transformed into

$$a(cd + ef) + \overline{a(cd + ef)} \equiv 1\,. \tag{8.2.5}$$

It follows from (8.2.5) that the group consisting of two conflicting pairs becomes superactive following intervention by peacemaker. Subjects c, d, e, f choose 1, i.e., they choose the path of violence.

Therefore, before the peacemaker intervened, violence could have been prevented, but after the intervention the group became superactive, and the path to peaceful resolution was blocked, regardless of any specific influences that were exerted. The peacemaker also chooses 1, i.e., punishment rather than reward.

8.3. Conflict of one subject with a group of two subjects

This situation is depicted by the graph in Fig 8.3.1:

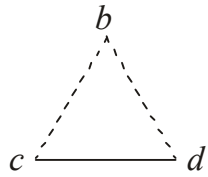

Fig. 8.3.1. Conflict of one subject, b, with group of two subjects, c and d

The corresponding polynomial is

$$b + cd \tag{8.3.1}$$

and the diagonal form

$$\begin{matrix} & & [c]\,[d] \\ & [b] + [cd] & \\ [b + cd] & & . \end{matrix} \tag{8.3.2}$$

By simplifying (8.3.2), we find equations for subjects b, c and d:

$$\begin{aligned} b &= b + cd, \\ c &= b + cd, \\ d &= b + cd. \end{aligned} \tag{8.3.3}$$

The influences are given in Table 8.3.1.

Table 8.3.1
Matrix of influences

	b	c	d
b	b	0	0
c	1	c	0
d	0	0	d

After substituting values from the matrix into equations (8.3.3), we obtain

$$b = b,\ c = 0,\ d = 0.$$

It follows from these equations that b has freedom of choice and can choose either 1 or 0; c and d choose 0. Thus, the group corresponding to Fig.8.3.1 has the potential to refrain from violence.

What will happen if peacemaker a joins the group (Fig.8.3.2)?

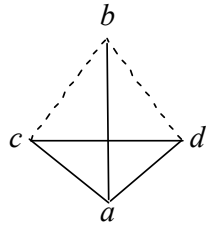

Fig. 8.3.2. Graph of group from Fig. 8.3.1 with peacemaker a

This graph corresponds to the polynomial

$$a\ (b + cd) \qquad (8.3.4)$$

and the diagonal form

$$[c]\,[d]$$
$$[b] + [cd]$$
$$[a]\,[b + cd]$$
$$[a\,(b + cd)] \qquad , \qquad (8.3.5)$$

which after transformation becomes

$$a(b + cd) + \overline{a(b + cd)} \equiv 1\,. \qquad (8.3.6)$$

The group whose graph is given in Fig. 8.3.2 is superactive. Subjects b, c, and d choose alternative 1, i.e., violence. Peacemaker a also chooses alternative 1; for him it means using punishment to prevent violence.

Therefore, the inclusion of a peacemaker in a group consisting of one subject in conflict with two subjects, themselves in a relationship of cooperation, makes the group superactive, and the possibility of refraining from violence, previously present, is lost.

8.4. Conflict of two subjects

In the previous two sections, we gave examples of increased tension resulting from the addition of a peacemaker to groups that are in conflict. Nevertheless, there are examples in which the peacemaker's mediation is very useful, like a marriage counselor who helps conflicting spouses.

Consider the conflict between two elementary groups, that is, two subjects (Fig.8.4.1):

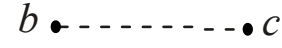

Fig. 8.4.1. Conflict between two subjects

This graph corresponds to the polynomial

$$b + c \tag{8.4.1}$$

and the diagonal form

$$\begin{matrix} [b] + [c] \\ [b + c] \end{matrix}, \tag{8.4.2}$$

which is equivalent to

$$b + c + \overline{b + c} \equiv 1 .$$

We see that the group in Fig. 8.4.1 is superactive.

With the addition of a peacemaker, the graph becomes Fig.8.4.2:

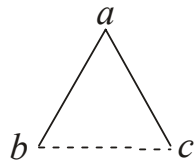

Fig. 8.4.2. Peacemaker a joins conflicting subjects b and c

This graph corresponds to the polynomial

$$a(b + c) \tag{8.4.4}$$

and the diagonal form

$$\begin{matrix} [b] + [c] \\ [a]\,[b + c] \\ [a\ (b + c)] \end{matrix}, \tag{8.4.5}$$

which is transformed into

$$a(b + c) + \overline{a} . \tag{8.4.6}$$

As a result, we obtain three equations:

$$\begin{aligned} b &= a(b + c) + \overline{a}, \\ c &= a(b + c) + \overline{a}, \\ a &= a(b + c) + \overline{a}. \end{aligned} \tag{8.4.7}$$

Is there now an opportunity to refrain from violence? Consider the following matrix of influences:

Table 8.4.1
Matrix of influences

	a	*b*	*c*
a	*a*	1	1
b	0	*b*	0
c	0	0	*c*

The peacemaker, *a*, inclines subjects *b* and *c* toward violence; they incline each other toward refusal of violence and the peacemaker toward refusal of punishment. With these influences, the equations appear as follows:

$$b = b, \quad c = c, \quad a = \overline{a} \ .$$

Subjects *b* and *c* have freedom of choice and are able to choose 0, a nonviolent course of action. The peacemaker is in a state of frustration. Therefore, when two subjects are in conflict, the presence of a peacemaker can avert violence.

8.5. Generalization

The analysis conducted in sections 8.2, 8.3 and 8.4 demonstrates that a peacemaker's success depends on the type of group he tries to reconcile. If two subjects, themselves in cooperation, are in conflict with another two subjects who are in a state of cooperation with each other, or if one subject is in conflict with a pair of subjects who are in a state of cooperation, then the presence of a peacemaker may stimulate violence. However, if two elementary groups, that is, two individuals, are in conflict, then the presence of a peacemaker may avert violence. Let us generalize this result.

A group consisting of conflicting subgroups corresponds to

the polynomial

$$(a_1 \ldots a_{k_1}) + \ldots + (r_1 \ldots r_{k_n}), \tag{8.5.1}$$

where max (k_1, ..., k_n) > 1.
Using (8.5.1), we construct the diagonal form

$$\begin{matrix} & [a_1] \ldots [a_{k_1}] & & [r_1] \ldots [r_{k_n}] \\ [a_1 \ldots a_{k_1}] & + \ldots + & [r_1 \ldots r_{k_n}] & \\ [(a_1 \ldots a_{k_1}) + \ldots + (r_1 \ldots r_{k_n})] & & . & \end{matrix} \tag{8.5.2}$$

After transformation, form (8.5.2) is equivalent to (8.5.1).

An equation for subject a_1 is as follows:

$$a_1 = (a_1 \ldots a_{k_1}) + \ldots + (r_1 \ldots r_{k_n}). \tag{8.5.3}$$

Let the values of all variables on the right-hand side of (8.5.3), except a_1, be equal to 0. Then (8.5.3) is reduced to one of the following:

$$a_1 = 0, \quad a_1 = a_1. \tag{8.5.4}$$

The second equation appears when $k_1 = 1$. Each equation has the solution 0. Thus, subject a_1 is able to choose the nonviolent alternative. Similar considerations can be made for each subject. Therefore, a group consisting of conflicting subgroups, among which at least one is non-elementary, can transfer into a state where the subjects can make the decision not to use force.

Let us look at what happens if peacemaker z joins the group. The polynomial changes to

$$z((a_1 \ldots a_{k_1}) + \ldots + (r_1 \ldots r_{k_n})) \tag{8.5.5}$$

and the diagonal form to

$$\begin{array}{c} [a_1]\ldots[a_{k_1}] \qquad [r_1]\ldots[r_{k_n}] \\ [a_1\ldots a_{k_1}] + \ldots + [r_1\ldots r_{k_n}] \\ [z][(a_1\ldots a_{k_1})+\ldots+(r_1\ldots r_{k_n})] \\ [z((a_1\ldots a_{k_1})+\ldots+(r_1\ldots r_{k_n}))] \end{array} , \qquad (8.5.6)$$

which after transformation becomes

$$z((a_1\ldots a_{k_1})+\ldots+(r_1\ldots r_{k_n}))+\overline{z((a_1\ldots a_{k_1})+\ldots+(r_1\ldots r_{k_n}))}\equiv 1\ . \qquad (8.5.7)$$

Thus, the group of conflicting subgroups becomes superactive after a peacemaker joins it: each subject chooses violence, and the peacemaker chooses punishment.

Consider a group in which every individual is in conflict with everybody else. This group corresponds to the polynomial

$$a_1 + \ldots + a_n \qquad (8.5.8)$$

and the diagonal form

$$\begin{array}{c} [a_1] + \ldots + [a_n] \\ [a_1 + \ldots + a_n] \end{array} , \qquad (8.5.9)$$

which is transformed into

$$a_1+\ldots+a_n+\overline{a_1+\ldots+a_n}\equiv 1\,. \qquad (8.5.10)$$

A group consisting of n conflicting individuals is superactive. After peacemaker z joins the group, its polynomial is

$$z\ (a_1 + \ldots + a_n)\ , \qquad (8.5.11)$$

and its diagonal form

$$\begin{array}{c} [a_1] + \ldots + [a_n] \\ [z]\ [a_1 + \ldots + a_n] \\ [z\ (a_1 + \ldots + a_n)] \end{array} . \qquad (8.5.12)$$

After simplifying the form we obtain the expression $z(a_1 + \ldots + a_n) + \bar{z}$ and equations corresponding to the subjects:

$$\begin{aligned} a_1 &= z(a_1 + \ldots + a_n) + \bar{z}\,, \\ a_2 &= z(a_1 + \ldots + a_n) + \bar{z}\,, \\ &\ldots\ldots\ldots\ldots \\ &\ldots\ldots\ldots\ldots \\ a_n &= z(a_1 + \ldots + a_n) + \bar{z}\,, \\ z &= z(a_1 + \ldots + a_n) + \bar{z}\,. \end{aligned} \qquad (8.5.13)$$

Let the peacemaker provoke subjects a_1, a_2, ..., a_n to choose violence. Let each subject incline every other subject to reject violence (since they are united by hostility toward the peacemaker) and incline the peacemaker to choose encouragement. The matrix of these influences is given in Table 8.5.1.

Table 8.5.1
Matrix of influences

	a_1	a_2	. . . . .	a_n	z
a_1	a_1	0	. . . . .	0	0
a_2	0	a_2	. . . . .	0	0
. . .	. . . . .				
a_n	0	0	. . . . .	a_n	0
z	1	1	. . . . .	1	z

By substituting the values from the matrix of influences into equation (8.5.13) (from column a_1 into the equation for a_1, from column a_2 into the equation for a_2 and so on), we obtain solutions for (8.5.13):

$$a_1 = a_1,\ a_2 = a_2,\ \ldots\ldots,\ a_n = a_n,\ z = \bar{z}\,. \qquad (8.5.14)$$

We see that every subject has acquired freedom of choice and can choose a nonviolent line of behavior. This is possible thanks to the presence of the peacemaker and his provocative influences. The peacemaker himself is in a state of frustration.

Thus, a peacemaker's presence in a group of conflicting subgroups increases the intensity of conflict, but when single individuals are in conflict, the peacemaker's influence can reduce that intensity.

8.6. The case of two peacemakers

Consider a conflict between the two pairs of subjects represented in Fig. 8.2.1. Let two peacemakers a and b, in a state of cooperation, join this group (Fig.8.6.1).

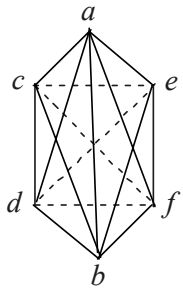

Fig. 8.6.1. Group containing a pair of subjects in conflict and two peacemakers

This graph is decomposable. It corresponds to the polynomial

$$ab\ (cd + ef) \tag{8.6.1}$$

and the diagonal form

$$[ab\ (cd + ef)] \begin{matrix} [a]\,[b]\,[cd\ + ef] \\ [cd] \quad + \quad [ef] \\ [c]\,[d] \qquad [e]\,[f] \end{matrix} . \tag{8.6.2}$$

By simplifying (8.6.2), we find that

$$ab(cd + ef) + \overline{ab(cd + ef)} \equiv 1 . \qquad (8.6.3)$$

The group in Fig.8.6.1 is superactive, and the paradox of the peacemaker appears. The addition of a second peacemaker does not eliminate the paradox.

Consider now a situation in which peacemakers a and b are in the state of confrontation between themselves (Fig.8.6.2).

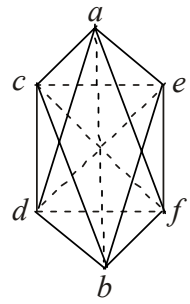

Fig. 8.6.2. Group containing two conflicting subgroups and two conflicting peacemakers

This graph is decomposable; it corresponds to the polynomial

$$(a + b)\,(cd + ef), \qquad (8.6.4)$$

and the diagonal form

$$\begin{array}{ccccccc} & & & & [c]\,[d] & & [e]\,[f] \\ & & [a] + [b] & & [cd] & + & [ef] \\ & [a + b] & & [cd + ef] & & & \\ [(a + b)\,(cd + ef)] & & & & & , & \end{array} \qquad (8.6.5)$$

which is transformed into

$$(a + b)(cd + ef) + \overline{(cd + ef)} = a + b + (\bar{c} + \bar{d})(\bar{e} + \bar{f}) . \qquad (8.6.6)$$

As a result, we obtain six equations of the type

$$x = a + b + (\bar{c} + \bar{d})(\bar{e} + \bar{f}), \tag{8.6.7}$$

where x can be replaced with the variables a, b, c, d, e, f.

Let peacemakers a and b incline all subjects to nonviolent action and each other to encouragement. Subjects c, d, e, f incline each other toward violence and the peacemakers to punishment. These influences are shown in Table 8.6.1:

Table 8.6.1
Matrix of influences

	a	b	c	d	e	f
a	a	0	0	0	0	0
b	0	b	0	0	0	0
c	1	1	c	1	1	1
d	1	1	1	d	1	1
e	1	1	1	1	e	1
f	1	1	1	1	1	f

By substituting $x = a$, $x = b$, $x = c$, $x = d$, $x = e$, $x = f$ and the corresponding values of variables from the matrix of influences into equation (8.6.7), we find that

$$a = a,\ \mathrm{b} = \mathrm{b},\ c = 0,\ d = 0,\ e = 0,\ f = 0.$$

We see that the peacemakers have freedom of choice; they can choose either punishment or encouragement; each of the subjects c, d, e, f chooses nonviolence. Therefore, a group consisting of two pairs of allies being in conflict *can be* inclined to choose nonviolent action, if the two peacemakers joining the group are in conflict with each other.