A QUANTITATIVE MODEL OF THE AMPLIFICATION OF POWER THROUGH ORDER AND THE CONCEPT OF GROUP DEFENSE

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ABSTRACT

I propose a simple quantitative model of how the power of a leader over a group is amplified when he or she starts to order the group. This model implies that a small well-informed minority can easily govern a previously ordered majority such as hijacked passengers. The model leads to the concept, “group defense,” which stresses the importance of group members resisting enemy ordering and creating a counter-ordering. Group defense may be helpful in preventing fatal hijackings such as the ones that occurred on September 11 and other massacres on civilians.

Introduction

Why did the overwhelming majority of concentration camp prisoners not openly resist the Nazi guards and when they resisted, why were they not more successful? The concentration camps were not unique in showing how a few, well informed enemies, are able to murder the multitude. Most recently, this question gained new urgency with the terrorist acts in the United States: A minority of 15 barely armed terrorists on September 11 was able to hijack 3 planes with several hundred passengers on board and fly them into buildings committing mass murder. The hundred or so passengers and crew were only able to resist in one of the planes, thwarting the intention of the hijackers to kill even more. In the end nobody on that plane survived either. One might have expected that the passengers and crews on all flights would have resisted and been able to overwhelm the terrorists and fly the planes to safety.

In this contribution I propose a simple quantitative model of how the power of a leader over a group is amplified when the group is ordered. This model implies that a small well-informed minority can easily govern an ordered majority and suggests the importance of a new concept, “group defense” that may be helpful in preventing fatal hijackings of the September 11 type and other mass murders of civilians.

How power is amplified through order

Consider a drill sergeant trying to line up her recruits. This maneuver imposes order on a group and, as we will see, greatly increases the power of the drill sergeant. Assume we measure the power a particular drill sergeant displays over a lone recruit to be P per time interval. Consider two situations which includes all the recruits: none of the recruits lined up and all the recruits lined up – in other words, no order or perfect order among

the recruits. In the case of no order, each recruit experiences P/N displayed power from the sergeant because her attention and intimidation has to be equally shared among the N recruits. The sum over all recruits, the displayed or “real” power is then P, same as for a single recruit.

$P_{real}=P$

In the case of perfect order among the recruits, the drill sergeant’s total displayed power stays the same, P, but through the ordering process she now has added a new kind of power over the ordered recruits, "virtual" power. Each recruit knows that if he gets out of line, as long as he is the only one doing it, he has to face a P confrontation with the sergeant. This threatened power of the drill sergeant is not actually displayed by her until the recruit gets out of the line. Before it is displayed or “real” we call it “virtual”. It is important because it is *considered* to be real and prevents recruits from moving out of the lineup. How large is her virtual power? It is N*P*d (P per recruit, with d likelihood of discovery adding up to N*P*d for all recruits). In the case of perfect order we approximate d=1 and obtain:

$P_{virtual}=N*P$

This is quite extraordinary: a sergeant can enhance her or his virtual power 10-100 times without doing anything but lining up the recruits. No additional weapons or backups are needed. The sergeant’s virtual power comes about because and only because the recruits are ordered. The more ordered they are, the larger is her virtual power, in other words, the order amplifies her virtual power. The virtual power varies as

the number of recruits get out of the lineup. As she orders the recruits into the lineup, her virtual power rises from 0 to NP.

The increase in virtual power due to the ordering of the recruits is but one of the several sources of power through order. Another source of power results from the tendency of most people to copy the behavior of the people around them (1). If we label this power also as virtual, it can be quantified as c*P*n per recruit in the situation of perfectly ordered recruits where c is the conformity power a recruit has over another in units of the power the sergeant has over a recruit, and n is the number of neighbors he has eye contact with. In some instances n is about 8, in some instances this can become much larger depending upon the formation of the recruits. For all the recruits the result is:

$P_{conformity - virtual}=N*c*P*n$

Two other types of power result from the successful threat of collective punishment and the planting of spies among the recruits. Suppose our sergeant imposes collective punishment. If the recruits don't want to be punished, they will look around to make sure any dissenters get in line. A single unaligned recruit faces the real power P from the drill sergeant and the real power (N-1)*P*s from the other recruits, where s the power a recruit has over another in units of the power the sergeant has over a recruit.

$P_{collective\ punishment}=(N-1)*P*s$

The corresponding virtual power is (N-1)*P*s per recruit or, for all recruits:

$P_{collective\ punishment - virtual}=N*(N-1)*P*s$

The role of spies is to keep the power of the sergeant intact when her or she is not present. The more spies, the higher the probability that the sergeant will find out about individual deviations, for simplicity we assume that there are enough spies to make the probability 1. The power from spies is then

$$P_{spies - virtual} = P_{virtual}$$

In total, the power of the sergeant in the case of all ordered recruits is all virtual and is:

$$P_{totalordered} = P_{virtual} + P_{conformity - virtual} + P_{collective\ pusnishment - virtual} + P_{spies - virtual} =$$

$$N*P + N*c*P*n + N*(N-1)*P*s$$

The power amplification resulting from ordering the recruits is then:

$$Amplification = N + N*c*n + N*(N-1)*s$$

If we pick s=0.1, n=8, and c=0.1 the amplification for 100 recruits is then

$$Amplification\ (N=100, s=0.1, n=8, c=0.1) = 1170$$

thus the sergeants power has increased more than 1000 times.

Implications for hijacking victims and concentration camp prisoners

If a lightly armed hijacker is an experienced fighter and can evenly battle say four passengers, four hijackers should not be able to control more than sixteen passengers. The model of power amplification through order, however, suggests otherwise. Once the hijackers orders the passengers, their virtual power $P_{virtual}$ is amplified 100 times if there are 100 passengers. The passenger group would then act as if the hijackers could evenly battle 1600 of them.

At Sobibor, a Nazi death camp, 110-150 camp guards succeeded in killing 90,000-100,000 victims in three months (2). The model of power amplification through order provides a plausible explanation why the 3,500-6,000 prisoners present in the camp at any one time were not able to rebel against the guards (until the very end of the camp's existence).

Because of the advantage in weaponry, clothing and physical shape of the concentration camp guard, a single guard can probably evenly battle 10-20 prisoners giving him the real power of P=10-20. Since the guards were careful to order the camp in various ways, their virtual power was much larger. If each guard was able to keep 35 prisoners ordered, his virtual power would make it seem as if he alone could battle 350-700 prisoners before they could get to him.

Strategies for group defense

The informed minority we have alluded to is one which has had experience with the amplification of power through order. Such informed minorities would include military

leaders, presumably the hijackers of September 11, but also flight cabin crew, school teachers, and other people who are in charge of groups.

The majority of civilians may not be aware of this phenomenon, however. The model of power amplification through order suggests that to prevent hijackers from taking control of civilians, the latter have to become more informed about “group defense”.

A group can defend against ordering in two ways, by not ordering or by counteracting ordering with a more powerful opposing ordering.

To not be ordered, the civilian population should be instructed as a whole not to respond to the ordering requests of the enemy. Some groups of non-violent protesters consider the police the enemy and succeed in making it very difficult for the police by refusing all cooperation. The judgement of which orders can be followed and which cannot should probably not be left open to individuals; that would allow the enemy to begin to order some group members, immediately making it more difficult for the remaining members to prevent further ordering. Leaving the judgement to group consensus is probably even worse: it is very difficult for any group to quickly organize a common response to an ordering request, let alone if one of the ordering requests is not to communicate within the group.

If the group did not succeed to preventing the ordering of itself, the group is in a difficult position because of the amplified power of the enemy. The group then has to try to counteract the ordering by either removing the ordering or imposing an opposing ordering. A learned signal to disperse a group (for example, a cry of “we will all be killed”) is an example of the former. Opposing orderings can be accomplished by

penalizing the group members who ordered most strongly or most willingly and those who became spies. The difficulty here is that the real penalty from the counteracting forces has to be as strong as the perceived potential penalty from the enemy, a penalty already strongly amplified by the ordering. A non-violent example of counter-ordering is the organizing of employees into a strike against their employer.

What might be some of the specific group defenses against hijackings? Once a plane is hijacked, the passenger cabin could be fed prerecorded messages pertinent to hijackings. Such messages could help preventing the hijackers from ordering the passenger group by making it difficult for the hijackers to be heard. These messages could also start to introduce a counter-ordering of the group by publicly or privately identifying, for example, which rows of passengers should take what kind of action. With a little more technical preparations the cabin audio visual equipment could be taken over irrevocably by ground control, giving them access to the passengers. Planes could also be outfitted with individual audio-visual feedback systems making it possible for ground controls to instruct and get feedback from the plane passenger by passenger. In one of the planes of September 11 the passengers presumably succeeded in counter-ordering precisely because they were receiving information from the outside: they found out via their cell phones that the hijackers were planning for all of them to die.

Issues to consider include which of the particular architecture and furnishings of an airplane are useful to the hijackers taking control over the passengers and then change them. For example, the more private each seat is, the harder it is for the hijackers to enforce their ordering of the passengers. The less public space there is, the harder it is for the hijackers to communicate with the passengers and with themselves. Hijackers seem to prefer to move all the passengers to the back of the plane, creating a buffer

between them and the passengers. This buffer could be used by the plane manufacturers as well to aid the counter-ordering of the passengers under such circumstances.

Similarly, one could make it more difficult for the enemy to execute civilians by giving them information useful in resisting ordering and helpful in counter-ordering. Information about the importance of preventing obedience to the perpetrators, about the likely fate of the victims, about signs of impending execution (for example, being asked to undress), and ways to disperse a victim group on a moment's notice are some suggestions.

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REFERENCES

1. ASCH, S.E. Studies of independence and conformity: a minority of one against a unanimous majority. Psychological Monographs, 1956, 70.

2. ARAD, Y. Operation Reinhard Death Camps: Belzec, Sobibor, Treblinka. Bloomington, 1987.