AIR POWER STUDIES CENTRE

PAPER 66

July 1998

PLANNING TO WIN

By

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About the Author

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Other posts within which Mr warden has built his reputation as an innovator have included: Special Assistant to the Vice President of the United States; head of the Air force's Air Command and Staff College; and commander of the 36th Tactical Fighter Wing in Bitburg, Germany. He has over 3,000 flying hours in aircraft such as the F-15, F-4, and OV-10, incorporating 266 combat missions as a forward air controller over Vietnam and Laos in the Vietnam War.

John warden formally retired from the military in 1995 and started his own company, Venturist Incorporated, specialising in corporate strategy development, team building and innovation, and multi-media design and gaming. He has a BS from the United States Air Force Academy, an MA from Texas Tech University, and is a graduate of the National War College.

INTRODUCTION

I want to talk today about planning to win. Obviously the hypothesis here is that it's desirable to win and that if you are going to do so, you've got to do some planning. I'd like to start out with a question: as an organisation - as a military organisation, as the Royal Australian Air Force, as the United States Air Force, as a company - do we really exist in our own minds to fight or do we exist to win?

Figure 1 - Exist To Fight Or To Win ?

Let me suggest how we might look at this question. We might look at the amount of time, money, energy and thinking that's invested in various aspects of our trade. And we might look at something like Figure 1 and see that we spend a lot of time on the basics of flying - as we say in the United States in the basic blocking and tackling; sales calls in the business world. We spend a little bit less time, probably, thinking about how we are going to bring more than one tactical engagement together - two versus two in air-to-air; or 'business' making some kind of a sales presentation as opposed to a single sales call. We spend less time than that, I would argue, in thinking about war-fighting issues, including improvements to logistics systems, etc. Then, at the very bottom we spend, I would argue, very little time, especially at the command and management levels of companies or of our military, actually thinking about winning.

As I was doing a little bit of research for this presentation, I did an Internet search of the joint documents - joint doctrine, including the dictionary of military terms and so on. In that Internet search I could find not a single primary entry for the words 'winning', 'to win' or 'victory'. There was a whole lot of things in there about how to do tactical things, but almost nothing about the final end states that were supposed to be the result of this action. Now what I would like to suggest is that, at the highest levels - and perhaps moving down to a fairly low level - we ought to be reversing the

scheme in Figure 1. We need to spend a whole lot of time thinking about winning and what that really means.

WINNING

Now to think about winning, it probably helps to start out with a little bit of a definition of what winning is. In Figure 2a, the shaded circle is merely a representation of an opponent or some system that we want to change. We'll define winning very simply by saying we have won when the opponent - or the opponent's system - is in the state we want it to be in and when it can only do what we want it to, or will only do what we want it to. Now, how we are going to go about measuring that is interesting and we might think about it in terms of the energy that exists within the system - pre-hostility. Now our next thought might be to say: well, how much energy does that system need to be nasty - to do things we don't want it to do? That perhaps would be represented by the striped area. Winning then, in many senses, is probably nothing more than energy management aimed at reducing the overall energy level of an opponent's system to where it is less than what it needs to do things that you don't want it to do (as shown in Figure 2b).

(a) Pre-hostility

Post-hostility

Figure 2 - Winning: Energy States And Crisis

We'll talk about this as a system and we'll go into a little bit more detail, but our real thrust here is not thinking about the opponent's aeroplanes or his ships, but thinking about the opponent as a system and changing his overall energy level as required. That's an example of negative energy. As we all know, in the years to come as militaries, we're all going to be involved in a lot of operations that are not traditional war. Disaster relief is an example, but this in my mind is nothing different at all from normal war. It's simply that the end state is somewhat different. In this particular case we might use the little spotted circle in Figure 3a to represent the amount of energy that a country perhaps has after a disaster. In the shaded area is the minimum energy needed for that country to survive, prosper and grow. So our operation then becomes one of changing the energy except, this time, putting positive energy into the system in such a way that it has enough for it to do what we want it to do (as shown in Figure 3b). A bomb is a negative energy weapon and a can of beans is a positive energy weapon. We all need to think more about it in this way because more and more we are talking about changing energy states.

(a) Before Disaster Relief

(b) After Disaster Relief

Figure 3 - Winning In Disaster Relief: Positive Energy And Crisis

Now if we're going to talk about winning, we need to be talking about the environment in which we're going to be operating. I would start out by arguing that, the environment in which we're all going to be operating in the future is significantly different - revolutionarily different, completely different - from anything which any of us have experienced or, indeed, anything within human experience.

I think it first came clear to me how different this world was and how differently we needed to think when I was down in Checkmate,[1] almost seven years ago on 16 January 1991. It was 1830 hours Washington time, the Secretary of the Air Force was there with us, along with the Director of Plans and a lot of the other people who'd been involved in the planning. And what were we doing? In real time we were watching on television what was going on in the heart of the enemy capital we were about to bomb - quite an experience in itself. It was a little bit disconcerting because there was some heavy artillery or anti-aircraft fire going on at that time and there shouldn't have been any because there weren't any aeroplanes over Baghdad at 1830 hours , or there certainly shouldn't have been. Although we were watching, we had an inability to do anything about it.

The next thing that happened was, I think, in many ways even more dramatic. At 1900 hours CNN reported, 'Yes, there are some bombs going off around the city'. We could see where they were going and had a pretty good idea that, in fact, the bombs were hitting where they were supposed to. So there's a nice input measure; again within seconds of the start of the war we had this information, without precedence. But more important was that a few seconds after that I remember turning to the Secretary of the Air Force and saying: 'I'm a little bit worried here. It is 45 seconds after the war's start and the electricity isn't off. Why isn't the electricity off?' - after all, that was the initial target for the operation. I had no sooner said that than the CNN picture went black. The CNN guy said, 'Baghdad has just gone black...maybe the Iraqis turned out the lights'. And we all said, 'No they didn't!' I'll

2 Checkmate was a directorate in Air Force Plans, Headquarters United States Air Force. Colonel John Warden was its leader at the time of the Gulf War. The organisation was known for encouraging independent thinking and analysis on important combat issues. *Checkmate* formulated the basis of the plan for the air war against Iraq. See R.T. Reynolds, *Heart of The Storm: The Genesis of The Air Campaign Against Iraq*, Air University Press, Maxwell Air Force Base, Alabama, January 1995.

admit it was little bit hyperbolic but I rolled back in the chair and threw my arms up and I said: 'The war is over; we won. There is nothing now that the Iraqis can do that can prevent us from exercising our military will upon them.' You may argue with that but I would maintain that it was a reasonable statement to make, and after only 45 seconds.

The key issue here is that things move at a velocity which is simply incredible. And if we are not thinking and moving with that velocity, we're going to be in big trouble. It is a really different world. How different is that world? Well, to me it's probably the most revolutionary period in the history of mankind - a period that requires substantial new thinking and an enormous amount of agility. Within this revolutionary period, I think there are three huge revolutions going on at the same time: an information revolution, a military technological revolution (and I don't think of the term RMA here in quite the same way), and a geopolitical revolution. I'd like to talk about the first two of those a little bit.

INFORMATION REVOLUTION

We could describe the information revolution in a number of ways, but perhaps more than anything else it's characterised by the extraordinary velocity of information dissemination. Information moves at a great rate and because it moves quickly, by definition, it moves widely, to every place, very soon after it comes into existence. This, for practical purposes means that your customers (if you're in business) and your opponents (whether they're military or business) are going to know everything that is going on. Likewise, this speed of information dissemination means that information has a very short life span - it's very valuable when it first comes out but it rapidly loses its value. This says to me that we can no longer think about hiding information - that the energy expended on trying to keep secrets is counterproductive - and that one is instead successful as an organisation, or indeed perhaps as an individual, by exploiting information faster than the other person.

Information speed is also leading to a significant reduction in product cycle times. We deal with some industries where product cycle times are down into the weeks.

Most product cycle times in most industries are down to a year or two or three. There exists only one counter trend to this in the world, that I know of, and that's the product cycle times of military systems. These are going in exactly the opposite direction and I would argue that that is a divergence that cannot and should not be allowed to stand. A little bit more on that later.

There are some interesting impacts from this information revolution. As an example, the impact on new types of technology. In the old era - 10 years, 50 years ago - we would get a new technology (gunpowder or the machine gun for example) and it would take a fairly long time before it was perfected enough to where it would begin to have serious impact. Then, once it had achieved serious impact it might last for another 50 years or so. Sailing ships in the Royal Navy were once in service for a hundred years. That, I don't think, is the case any more. What we have today is a situation where new technologies arise - for example, the F-117 stealth fighter - that have a very rapid impact, but whose impact is short lived; fading very quickly away

because everybody learns how to deal with it. This is the key to wealth in the semiconductor and integrated circuit industry, and a lot of other industries besides. Bring out something, bring it out rapidly, have a high impact and then start driving the price down on it. To me what this says is that the very concept of a 50 year aeroplane is one that is totally out of consonance with the age in which we live. In fact, the life spans of aeroplanes must become significantly shorter or we will be doomed to live with technology which is utterly irrelevant by the time it even comes out.

The next impact of the information revolution is this: the number of smart people available to do any particular job is falling rapidly. This isn't because there are fewer smart people in the world; just the contrary. It's because the number of opportunities that are attracting smart people are expanding at such a huge rate that they simply get diffused. When I say smart people I don't mean geniuses either; I mean relatively smart people - the kind of people that we've historically thought we needed to have in the officer corps (especially in a technological force like the Air Force). Tomorrow there will simply be fewer people available to do the kinds of jobs that we are doing today. We might be able to get more if we're willing to pay a whole lot more for them, but it's not going to be just a little bit - it's going to be a lot. We need to take that into account.

MILITARY TECHNOLOGICAL REVOLUTION

The second huge revolution is the military technological revolution which is a combination of tremendous computational power, increasingly unlimited bandwidth and a number of other technologies - the key one of which is precision. Those things came together for the first time in the Gulf War where we were able to see what they could actually do as we watched F-117s flying over Baghdad dropping single bombs and hitting exactly what they were supposed to. This, in my mind, is not a revolution in military affairs but is the first genuine military technological revolution ever because for the first time we now have a conceptually different way to wage war. We can now wage war in parallel as opposed to the serial operations that constrained us in the past.

Let me illustrate just one aspect of this, and that's the aspect of precision. We can ask ourselves how many bombs it takes in order to have a 90 per cent probability that one bomb will fall on a target about a third the size of a football field (a fairly large target), or about a third the size of this room. As short a time ago as World War II, to have a 90 per cent probability to put one bomb on such a target we needed to drop over 9,000 bombs and fly over 1,000 B-17 sorties which meant putting 10,000 men at risk over a target. It was too expensive. If this room had been a target in World War II we would have sent people to go and bomb Canberra in the hope that maybe something would fall in this particular area. It changed in the Gulf War because, for the first time, there was precision available en masse which allowed one aeroplane with one bomb to provide that same probability.

I remember in Vietnam, as many of you here will also remember, that when you were assigned to hit a target that had previously not been hit, you would go out and you would find the target - it could be a bridge or a building or whatever - and you'd often find it sitting in perfect splendour; untouched yet surrounded by a moonscape of

craters. In the past, war was defined by misses. This war with precision (the Gulf War) was defined by hits. The whole experience of war - from rock throwing to dropping bombs - was suddenly inverted in this war. This is an extraordinary change that we have not really begun to grasp the full meaning of.

There are, for example, important logistical effects. Think about supporting one aeroplane and one guy, as opposed to 1,000 aeroplanes and 10,000 guys. There is the cost factor, and we'll get to that in a second. There is the time factor - the weeks or months required to plan a 1,000 ship raid substituted by just hours required to plan a single F-117 raid.

What else does it do? It drives you towards precision of effect. This means bombs fall not only where they're supposed to fall, but do only what they're supposed to do. If the target is this laptop computer, it does laptop computers; it doesn't do speakers unless it intends to do speakers.

We certainly try to store fewer platforms; simply because we can do with one aeroplane what it took a thousand to do in World War II. And that trend is continuing downwards. There is now more capital intensity because we need to start thinking about aeroplanes and other delivery systems not as expendable (as we have thought about them in the past) but instead as production machinery in much the same way that the company Intel thinks about spending two billion dollars to build a new chip factory which will be used for two or three years and then go into obsolescence. That's the kind of world that we're in. Platforms have got to be faster; yes, they must be hypersonic. The reason they've got to be faster is that they've got to keep up with the flow of information. If our physical delivery means are hopelessly behind the movement of information, we are defeated before we even start.

Let's talk about cost. The old era cost of, say, a B-17 put in 1997 dollars is somewhere in the vicinity of a half a million dollars. An F-117, on the other hand, costs about 100 million dollars. We say, well, if we have to make a decision as to which one of those we'll buy, we'll simply buy a bunch of those B-17s because they're so much cheaper. This was absolutely true when we were looking at it on a unit cost basis, and that is a reasonable basis for judgment when you're talking about attrition of systems and having to throw away a whole lot of them in order to achieve anything. However, it's not the case any more. What we need to be doing is measuring effect based on the outcome for the opponent; not on the unit cost. When we do it that way the ratio changes rather dramatically. The cost to put that single bomb into this room with the F-117 is a fraction of what it would have cost to do it with the B-17s. We need to have a completely different measure of how we are costing things and what we are willing to spend for them. Instead of the prices of aeroplanes going up I would argue that they are going down, if you measure at the right level. The right level to measure is not at the unit cost, it's at the systems cost and it is on the systems level - it's the effect that you are having on your opponent. We need to get on this curve and follow it religiously and not try to be following a curve that was built in an industrial age which is no longer here.

I said this cost saving was related to the military technological revolution. Let me give another quick illustration using the Gulf War. My overview of that war is simple: that Iraq started out in the summer of 1990 as a regional superpower, and that a few

months later in the spring of 1991 it was in pretty sorry shape (and it's still in that sorry shape), and that the cost to defeat Iraq was amazingly low by historical standards. I would argue that a new standard was set at that point, but that now we've got to drive well below that new standard. This was probably the first war in the first true military technological revolution and, as imperfectly as it was executed, it is still the data point on which we must operate. You don't get chances in today's world to have multiple data points so that you can be convinced there is a curve out there that you're going to follow. You've got to go with what you have or otherwise you're going to be in trouble.

We could go into lessons learned in great detail here, but let me instead suggest some simple key ideas. First, the military technological revolution offers incredible opportunities, but you've got to do complete rethinking of war itself. Second, precision redefines mass and concentration completely. We saw (and it was already mentioned today) that air power in fact can defeat land power. It's really a matter of moving power up into the third dimension to the high ground and then moving that high ground around and then exploiting it. You don't need to seize territory in order to win. In fact, seizure of territory becomes a very poor measure in military operations. Third and finally, when we are talking about saving money, we're actually talking about finding the greatest economy and the greatest efficiencies out of air and space forces; about measuring them against the effect that they are going to have on the opponent and about reducing the number of people that are needed in order to use them.

PLANNING TOP-DOWN

With all that as a preamble, how do we plan to win? As shown in Figure 4, we need to go through a fairly rigorous process which begins by thinking in terms of grand strategy. This is nothing more than identifying the objectives that we want. What do we want the peace to look like after we have conducted our operations? Next we think about centres of gravity or the opponent as a system. We have to set about finding centres of gravity which, when we affect them, will take us through to the grand strategy solution. Note that we are not paying any attention so far to what tools we are going to use to affect the centres of gravity. I can tell you that every centre of gravity in the world can be affected, or is vulnerable, to something. That's an absolute statement. Next we put together a campaign - an orchestration of the forces that are available to us. They may be information forces; they could be of all the services - it doesn't matter; together they form campaigns. And we need to think a lot about how we're going to terminate the operation. We need to make sure that we are giving the people who sit at the peace conference the sort of instructions necessary for them to get the best possible results from that process. Then there's the execution shown at the bottom of the figure. Why did I stick that down there at the bottom? Because when you get right down to it, there's not a huge difference in execution capability between pilot A in one country and pilot B in another country. If we think we're going to get huge leverages by concentrating all of our thoughts on improving executions, it's not going to happen. I would argue that we were superior to the North Vietnamese at an execution level during the Vietnam War, and we lost. We lost simply because the North Vietnamese had a much better grand strategy. They understood the centres of gravity against which they were operating, and they had a pretty good campaign. It

was terribly expensive in human lives, but from their stand point it was a good campaign.

Figure 4 - The Path To Success

Our point really is that the right grand strategy, strategy, and campaign will accommodate a multitude of tactical errors and omissions. Conversely, great tactics in the absence of a good strategy and campaign are likely to win neither battles nor wars.

What is the object of war? It's really simple; it's to win the peace, and that's all it is. We can define peace in a lot of ways. As an example, in the work that we were doing with General Schwartzkopf right after the Iraqi invasion of Kuwait, there were specific things that we used to define the sort of the peace we wanted to see following the war. These things included Iraq no longer being in Kuwait, its government restored and, then more complex, a more stable region. When it was accepted that part of the grand strategy was to make the region more stable, what that drove us to was reducing the energy level of Iraq down to a level where it could no longer be a strategic threat to its neighbours. At the same time we were going to have to be careful not to drive the energy level down to zero where it would create a huge vacuum which, in turn, would create waves of instability that could conceivably have lasted a century.

We need to think about outcomes carefully and we need to have some measures. When we're thinking about the measures, we've got to keep in mind that winning engagements, battles or wars is irrelevant unless we are better off after the event than we would have been otherwise. We need to keep in mind that wars are part of a process and that the kind of war that you are going to be able to execute is going to be very much a function of the peace that preceded. Also, we need to keep in mind that the way you execute the war (at any level, whether that be a Bosnian style operation or a Gulf War operation) is going to have an enormous impact on the subsequent peace. We all pay lip service to this, and rarely actually demonstrate it. War is a means to an end; it's not an end unto itself. Finally, we need to be aware that our

ultimate measure of success is the value of that peace which follows. This is so important that, as a planner or as a commander, you ought to be able to tell what each bomb has got to do with the peace that you want to follow the war. If you can't tell how a given bomb relates to the peace that's going to follow, then you probably haven't done your homework well and you probably shouldn't drop that particular bomb.

Let's take a quick look at another area of measurement. How do we decide whether we're doing well with regard to our force structure development process? Looking at Figure 5, we have a largely hypothetical line running across the bottom of the graph which shows the improvement in United States defence capability over time. Sitting here as we approach the 21st century we can look back and say 'Gosh, we've got two or three times the capability we had 10 or 15 years ago'. Another way of checking progress is against other militaries and we can say 'Gee, we're better than they are', and then all pat ourselves on the shoulders. However, this is a trap that company after company has fallen into; they've used the wrong benchmarks.

Figure 5 - Self Measurement

Let me suggest the possibility of another benchmark at the risk of being another one of these lecturers referring to Moore's Law and decreasing the overall understanding of it. If we go back to roughly 1975 (or to a little earlier than that and the advent of Moore's Law), the curve represents roughly the kind of progress that we had seen in integrated circuit technology and products associated with it. My question is: if that can be done in that industry, why could it not be done, at least theoretically, in the defence industry? Second, if in fact there is this huge gap between what we have achieved and what might have been achieved, is this not a gap that somebody else might fill in one way or another? In other words, what we're looking for are some absolute ways to benchmark ourselves; to not rely on comparisons with other people

in our own industry (an industry which is not moving anywhere near as quickly as the most successful industries of this world).

Serial vs Parallel War-Fighting

The old way of fighting was serial. It had to be; not because of incompetence on the part of commanders, but simply because the curse of imprecise weapons and poor communications demanded it. You had to get all of your aeroplanes, horses or men together in one place in order to break through the defences, or in order to have any hope that any of your missiles, rocks or bombs might actually hit something important. In serial war, every attack attracts a response. Blue attacks, red responds; blue attacks, red responds and so on. Target by target we make our attacks. We've got to do A before we can do B, we've got to do B before we can do C, and every time we do a new serial operation our opponent has learned something so we are actually going into an entirely new war. Individual successes may not change the overall energy level of the enemy system and, in fact, you may well find yourself confronting a more difficult situation after what appeared to be an initial success. The probability of being successful when you have to tie a lot of serial operations together is simply very low. This is not the way we want to go about waging war.

If we're going to be successful in today's world, we simply have got to have an understanding of the enemy as a system in order to find centres of gravity. There may be multiple ways to understand the enemy as a system. The one that we used in the Gulf War was the five ring system (shown in Figure 6) which seemed to work out pretty well. We have also applied this with great success in a number of commercial market areas for the analysis of companies as well as entire markets. What this indicates is that enemy A is not significantly different from enemy B. Everything (military or commercial) is organised in about the same way: it has a brain function; it has an energy conversion function; it has infrastructure; it has some population; and it has something to defend it. Everything is organised that way and with that in mind we can differentiate down to the detail, and we can do so very rapidly. In the Gulf War, that differentiation process led to a second level of centres of gravity (or targets systems if you will), which then required just one more differentiation to produce specific targets.

Figure 6 - Systems and Repeating Patterns: Five Ring Model

It's very easy for us to apply this process more broadly, whether we're talking about a market situation, guerrilla warfare or something else. Organisations are all the same

and when we want to change them we find centres of gravity. With the tools available to us from the military technological revolution, and with the comprehension that we are dealing with an opponent as a system, we no longer need or desire to make our attacks dangerously in serial. Instead we bring the enemy under parallel attack, creating a very rapid reduction in the energy level of the opponent and putting it in a position from which it simply cannot react.

Many of you will say 'Well, this is all great if you have a very large force structure'. The things that drove the Iraqis into the state of paralysis, literally in a matter of a few minutes (or hours if you want to take the most conservative view), for practical purposes amounted to about 100 aeroplanes - around 40 F-117s and around 60 F-111Fs - and probably, in that first 24 hours of the war, around 100 cruise missiles. Now those are not small numbers but, on the other hand, they are not huge numbers either. In fact, even with a smaller force we could still have imposed that paralysis, simply because there are not very many targets at operational and strategic system levels. It doesn't make any difference what the size of the country is, or the size of the opponent. In essence, you need to be thinking about parallel operations.

We can illustrate what we're talking about here with an example from World War II (see Figure 7). The United States Air Force began the strategic daylight bombing of Germany in January of 1943. Because of limitations on aeroplanes and the necessity to concentrate them all, we were able to attack one target a week, and that was all. In all of 1943 we ended up attacking about 50 targets. The Germans were able to deal with that situation. It still cost them, but they were able to deal with it and at the end of 1943 the Germans were functioning well. Conversely, within the first 24 hours of the war against Iraq we were able to hit 150 targets of greater significance. This represented a one thousand-fold time compression over what had happened to Germany and it simply put the Iraqis into shock. It was not because the Iraqis were incompetent, but simply because there was no reasonable way to deal with this sort of a problem. Had we been defending Iraq and been attacked in the same way, the outcome would have been precisely the same.

Figure 7 - Serial Versus Parallel War (World War II vs Desert Storm)

OFFENCE AND DEFENCE

Let's just think a little bit about a couple more basic ideas. Are we going to be defensive or offensive? One of the things that I found very interesting when we started trying to look for solutions to the Gulf problem was that almost everybody was primarily in a defence mode. The reason for this was actually entirely logical. All of us had spent our careers dealing with tasks like defending central Europe and defending South Korea. To the best of my knowledge there existed not a single plan for a counter-offensive in Europe. What we hoped to do was hold at some point, and, if it didn't look like we could, then we'd simply go nuclear, which everybody said was simply giving up. It was considered quitting because both sides were going to lose. So, our thinking had become very defensive.

We made a couple of observations about defence and those were these. First, that only an offence changes an environment. If you've got a situation out there that you need to change, you've got to change it with an offence. The offence in today's world is far more powerful than the defence. If Clausewitz was ever right about anything, he was not right about this - about the superiority of the defence - and especially not in today's world. Second, when you're on the defence you are at your opponent's mercy and the best outcome you can hope for is that you don't lose. You would normally not want to expend a lot of energy when the best possible outcome is that you won't lose.

SEIZING THE INITIATIVE

Now, we're talking about planning to win. Let's make this point. If we're going to plan we ought to make a plan that allows us to impose what we want on our opponent. The best plan is obviously the one that seizes the initiative and never lets it go. The worst plan is the one that deliberately cedes the initiative to the opponent and then becomes reactive. You might say that nobody would ever make a plan like that. Yet I would argue that virtually every plan made in the military and almost every plan that's made in business is exactly like that. People say we're going to make 'move one' and then we're going to sit back and see what the other guy does. In fact, we even drag out an old Prussian saying something to the effect that no plan ever survives the first contact with the enemy. Ladies and gentlemen, it is pure mental laziness if you believe that kind of stuff. The best plan is the one that seizes the initiative, does what is necessary and never allows your opponent to react. Now, you say, you need a lot of force structure to do that. I would argue this is not the case. You need to spend a lot of time thinking about what it is you're going to do and how you are going to make it happen.

You need to change the rules and let me give you an example of what I mean by that. I will tell you with utter certainty - I'll bet everything I have - that I can beat any grand chess master in the world. All I need are two conditions. Condition number one is that I get to be white so I move first. Condition number two is that I get to make the first twenty moves before my opponent can make a single move. This, I would argue, is the essence of planning and of winning - simply figuring out a way of making those twenty moves before the other guy can do anything. It's doable and it's not a matter of size; it's not a matter of numbers; it's a matter of sitting back and thinking about it and being willing to change the rules, if you will.

TIME VALUE AND WAR

I said before that we're in a very fast moving world. How fast is it moving? Figure 8 illustrates the time value of war. Something which is increasingly true is that the faster I bring key enemy strategic and operational level targets or centres of gravity under attack, the higher is my probability of winning because I have this parallel shock effect when I bring lots of things under attack in a very short period of time. Conversely, if I take a longer time to bring these things under attack, certain inevitabilities of the serial world will reduce the probability of my success. It doesn't mean that you can't win over a long period of time. It simply means that your probability of winning goes down because of all of the adverse things that are certain to happen. The rule then is very simple: it's to make things happen as close to simultaneously as you possibly can.

Figure 8 - Time Value of War

Now, a question that might reasonably arise is: how fast do you have to do these things? My thought for the United States, as an example, is that we ought to have the ability to be able to impose strategic and operational paralysis on an Iraq-size state within a maximum of 24 hours from the time of decision, and to do so without any pre-deploying. I would say that's probably a satisfactory time frame for the next four or five years. In six or seven years I'm thinking (and I'm sorry about the second reference to Moore's Law) that it ought to be possible in 12 hours, and then six, and then three. With the options that are increasingly going to be available to people (for example, biological attack) we can simply say that if we don't do things quickly, and if we're not successful quickly, then we're not going to be successful at all. That's not what we want. We want to plan to win.

None of this is exclusive to the military world. In the business world we make the same point (as illustrated in Figure 9). If you want to be successful at introducing a new product, your highest probability of success comes when you keep it to the minimum amount of time - the time that's required for you to do your research and development, manufacturing, product introduction, marketing and advertising. The faster you do it - the more parallel you make the processes - the more shock you

impose on the market and the more likely you are to be successful. The longer you take, more adverse things can happen. There will be more and more reaction by the competition until, finally, you get out to ‘x’ number of years and your product name will be irrelevant, even if nothing else has happened.

Figure 9 - Time Value in Commerce

I would argue that, in many ways, this is the kind of problem we have run into in the United States with programs like the B-1, the B-2, probably we’re going to run into it with the F-22 and we ran into it with the C-17. By stretching these things out we have allowed our enemies (the opponents of the program), for good reasons in some cases and bad reasons in others, to get enough strength to start making these adverse things happen. Our probability of success in bringing the project out as originally envisioned simply went down, down, down.

So, whether we’re talking about a new military system or a new commercial system, we need to make things happen as rapidly as we can. In a theoretically perfect plan things happen quickly. They are probably going to involve IPTs (integrated process teams), DFM (design for manufacturability), advertising blitzes and simultaneous development of a second generation product before the first generation product is even off the drawing board. This is a fast moving world; the world of the computer. Anything associated with the computer world (which is almost everything else now) is down to life cycles of months or a few short years at most. We’ve got to think seriously about how we’re going to change the life cycles of weapon systems for the military. I would argue, that, in fact, there is a very economical way to do it - to get more power for less money on the technological edge - instead of planning for obsolescence the way that many of our programs force us to do right now. However, that’s a different subject and a different talk.

REORGANISATION

The next idea is this: if we are presented with a new objective, a new situation or a new technology, we simply have got to change our organisation. We have two options. We can try to make the old organisation work or we can create a new organisation. We’ve seen examples of people trying to do both. I think probably the

best example was with the Germans and the French in the 1930s. In a comparison between German technology and French technology for the tank and the aeroplane, the French were probably a little bit ahead of the Germans. The French decided to take the new technology of the aeroplane and the tank and spread it out in the existing organisation. The Germans, on the other hand, recognised that new technologies, new situations and new objectives probably demanded a new organisation. They developed air armies and tank armies and when they applied that new organisation against the French in 1940, the French organisation was simply incapable of dealing with it. It wasn't a matter of individual incompetence on the part of the French soldiers or a lack of technology; it was a matter of organisation.

We have in the military this kind of organisation. I believe, and somebody can correct me if I'm in error, that we have about 17 layers of command from the four star level down to the basic airman or the private. This is pretty much the same organisation that Frederick the Great had when communications and precision were somewhat different than they are today. I would argue that, for cultural reasons (as previously suggested) and for efficiency reasons, this is simply not an organisation which is viable any longer. It needs to be changed and changed fairly dramatically. Now, exactly what it should change into nobody knows, but it's probably something much flatter. It's probably something that has far fewer walls than we have been accustomed to having - where there's much more contact between people and between things that are inside and what we used to think of being outside our organisation.

CONCLUSION

I want to finish with this point: it's not your father's air force. I don't care how old you are; it's not your father's air force. It's a different world out there. We really have moved from an old era of attrition warfare - which was an era of very low probability warfare with individual bombs unlikely to hit anything - into an era of precision where things are significantly more predictable than they have ever been in the past.

Let me give you another couple of analogies in this regard. We have moved from an era of Newtonian physics to an era where our world is increasingly affected by quantum events. Also, we have moved from the old era of the vacuum tube to the era of the integrated circuit. The transistor and the integrated circuit have simply changed the world. However, the transistor didn't change the world simply because it was a slightly better vacuum tube, or because it was a cheaper vacuum tube. It changed the world because it enabled entirely new concepts of operations: global positioning systems, laptop computers, and a myriad of other things that have changed everything we do and the way we go about doing it.

The point that I'd really like to make in closing is this: that as we get these new technologies - whether they're information technologies, whether they're individual weapon technologies, platforms or whatever - the last thing that we want to do is to try to use them to do the old B-24 and B-25 missions ten per cent better. Ten per cent better is simply uninteresting in a world where the power of the chip is doubling every 18 months. What is interesting is to get results that are 10 times, 100 times, 1000 times greater than anything that we could conceivably have achieved with the old technology or with the old concepts of operation. Increasingly we need to think about

reorganising ourselves and creating these new concepts of operation every time we end up with some new technology, or any new thing (even a new organisation) in order to allow us to get results.