

INDUSTRY VIEWS INDUSTRIAL PLANNING FOR DEFENSE

3 May 1950

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COLONEL MEETZE: Gentlemen, there are two sides to the picture of planning for production during a national emergency--planning by the military service and planning by industry. We have heard several lectures on mobilization planning by the various armed services during the last few weeks; this morning we are going to have an opportunity of hearing about industry's planning through the eyes of a man who is actively engaged in industrial planning assignments for both the armed services and private industrial organizations.

Our speaker is Mr. John W. Pocock, a partner in the industrial management firm of Booz, Allen and Hamilton. Mr. Pocock received his graduate degree from MIT, and his entire professional career has been in an executive and engineering capacity. Incidentally, this is a return engagement for Mr. Pocock, as he spoke to us last year.

The subject of Mr. Pocock's lecture this morning is "Industry Views Industrial Planning for Defense."

Gentlemen, it is a pleasure to present Mr. Pocock and welcome him back to the Industrial College.

MR. POCOCK: It is a pleasure to be with you gentlemen to discuss problems of industrial planning for defense and to examine today's activities in the field from industry's point of view. I am going to refrain from any opening discussion as to the growth of the importance of industrial planning as a part of military planning, since I am sure that by this point in your course your instructors and guest lecturers have adequately developed this thesis. Suffice to say that this growing emphasis on industrial planning in peacetime has occasioned some moments of distress as military men have striven to understand the mechanics of industry, and some moments of reluctance as industry has turned away from profitable peacetime pursuits to devote time and energy to developing war plans. While there can be no denying that substantial progress has been made in industrial planning for defense in the past several years, all has not been smooth sailing and there still exist today some basic problems and attitudes which could threaten the success of the continuing program.

Since for better or worse those of us in this room have become closely involved in industrial planning for defense, I suggest we examine some of these problem areas, not with a detached academic interest but with a sense of personal urgency that must come with the responsibility our fellow citizens have assigned us.

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When I speak of industrial planning for defense, I am speaking of all plans and physical preparations of industry to assist or make possible the transition from the normal peacetime state to full emergency output.

You will note the phrase "plans of industry." I think we recognize that all the top planning and coordination in the world means nothing if the activities so coordinated aren't themselves doing an effective job. The activities in this case are the individual companies, each engaged to a greater or lesser degree in its own mobilization planning. It is within the company organizations that the great bulk of the labor lies.

Of course, there are various degrees of planning effort required. Last year I spoke of four, and I think they still hold.

1. Companies whose product will not shift during an emergency period and whose planning effort is simply how to increase or cut back volume. Much of this is product required to maintain a given level of civilian economy. Mining, transport, and food processing are perhaps good examples.

2. Companies whose specific product will shift yet remain in the field of their knowledge and experience. Much of this is civilian-type product required for support of the military effort. Weavers and distillers are perhaps representative. Planning is extended somewhat, and problems of physical conversion of plant now enter into the picture.

3. Companies whose specific product may be discontinued and conversion required to production of existing materiel, or companies whose expansion requirements are so tremendous as to put them on another plane of operation entirely. Although the munitions items to be produced may be developed and some production experience accrued, still the mobilization changes are of major proportions and require major shifts in the "modus operandi" of the company. The automotive, aircraft, and shipbuilding industries are outstanding examples. It is in this category that most of our planning effort today is concentrated.

4. Organizations which will be expected to spring into production of new and advanced materiel, which because of technological advantage is required in quantity and at an early date, but upon which, because it is new, we have no direct experience upon which to base our planning. I am speaking of our electronic fire-control systems, stabilized gun platforms, guided missiles, and of course certain new and advanced aircraft.

I think in our industrial planning we too often look at the complexities and unknowns in this fourth category, and then in an uneasy and selfconscious manner turn our backs with the comment "we'll have

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to wait until some experience is built up." Actually, short of war, no great experience will be build up unless a program to accumulate this experience is laid out--but more of this later.

Now, of course, all planning situations can't be neatly pocketed in one of these four categories. Most situations involve problems typical of more than one. Today my discussions are most applicable to the last two categories, since all elements of planning are included in them.

Back again to the phrase "plans of industry." Among the growing group of professional industrial planners for defense--of both industry and the military--we often hear the statement, "industrial planning must be done by industry itself." I wonder if we really believe that? As I work with many groups in the field I hear opinions expressed that run from a belief in the complete responsibility of the military for industrial planning, right down to nut and bolt scheduling, to a belief in an almost "laissez faire" program wherein, given his production schedule, each producer should lay his own best plans and then count on the normal checks and balances in our economy to integrate all individual planning during the actual mobilization period. Obviously, neither extreme is the entire answer.

I wonder if we can sort out some of the factors in this picture toward the end of constructing a general policy proposition.

#### Industry's General Planning Practices

Let's forget the "for defense" phrase and talk about industry's general planning practices. Industry in general has been pretty successful in this country for a good many generations. Indeed, the strength of the country has risen pretty well in direct ratio to the growth of the industry. Of course, this growth of industry is the composite growth of a multitude of individual industrial units, each with its people engaged in planning how they can better meet the future as they see it. Since man is not yet able to completely control his destiny, so also blind chance enters this picture. But in the long run the only ingredient counteracting pure chance is the human mind at work and planning. Thus, I submit that the thinking and planning of American industry must have been fairly good to achieve the success demonstrated.

Furthermore, the pinnacle of achievement was attained in World War II. If we agree that this almost instinctive ability in industry to plan was to a large degree responsible for the recent wartime performance, we must also admit that this ability probably has not completely vegetated in the few years since the war.

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What, then, is this planning that industry is so capable in? There are many ways to approach it. I will try to break it down in a fashion which meshes with the continuing discussion.

We can break industry's planning into three phases:

1. What product is to be made and how much of it.
2. How the product can be made to meet these requirements.
3. How the product can be made at a profit.

The first area is that of product and market research and planning. It is an area in which American industry has become quite accomplished and set standards for the world. I pass over it quickly for reasons that are or will become apparent.

The second area--"how the product can be made"--is the one of greatest interest to us here today. Let's split it further. "How to make" planning includes:

1. Development and design of the product so that it meets the performance requirements and so that it can be physically manufactured at an expenditure of effort consistent with the value of the product to the user.
2. Development of methods whereby the product can be manufactured. This is the planning and layout of the production machine. This is the spot in which American industry has consistently worked the miracles of "production know-how." And this know-how is something that results from planning, experiment, and more planning.
3. Provision of the ingredients required for production--on schedule and in the right quantity.

Facilities and equipment.

Material.

Trained Manpower.

This is the area of largest detail planning effort and one in which industry has long been active.

4. Financial and cost planning which details the program to underwrite the production of the goods.

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5. Management organization to properly supervise the total effort--a phrase quickly read but pregnant with the most fundamental problems of any planning done by industry.

These five sub-areas of "how to make it" planning are repeatedly accomplished by successful industrial organizations for each new or revised product--whether a new style of shoe or a new jet fighter. The cumulative detailed plans for each product are then the total industrial plan for the company and are carefully matched with the total capacity of the company to absorb the program. I realize that you are familiar with this sequence, but our task at the moment is to sort out our thoughts prior to digging out some basic suggestions for improvement. Thus is answered "how can the product be made."

The third phase of planning covered "how to make the product at a profit." I bring this in because profits are measured in dollars, and dollars are the traditional common denominator in evaluating the effort required to produce against the value of the product to the user. Thus, industry is not immune to the problems of substitution for scarce (or expensive) materials, design for producibility (less expensive manufacture) high utilization of facilities (lower overhead cost)--and I could go on and on. The point I want to drive home is that industry's planning in our country has always been strongly flavored with getting the most out of the least--no new psychology need be developed on this score as we move over to the "for defense" planning. And if you don't believe that this planning is done under pressure, I wish you could have been behind the scenes in the battle to reach the market with automatic washers. Companies in that battle were engaged in total planning efforts spurred on by a more than sentimental urge toward economic survival.

This, then, is the pattern of industry's planning for years back--and evidently a successful one since it is hard to deny the existence of successful industry in this country today. May I suggest that the heart of the entire problem of industrial mobilization planning is how most effectively to harness this demonstrated aptitude of industry for dynamic planning to problems of industrial planning for defense.

#### Industrial Planning for Defense

Now, of course, industrial planning for defense isn't new. Genghis Khan was fairly successful with his program making it mandatory to provide or have available so many ponies per warrior, bows, arrows, armor--including reserves-- plus facilities to raise food, maintain war materiel, and so on. It's true that the great Khan's "for defense" degenerated into a roving offense--but the allocation of a portion of his economic capacity on a controlled basis was certainly an effective program.

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As we extend the general industrial planning practices of industry to the defense planning, it seems to me we have three major points of difference.

1. The product specifications and quantities now are handed over by the military. Thus, the first area of normal industry planning is supplanted.

2. The time period anticipated in normal production planning is foreshortened. Urgency of achievement takes priority over ultimate economy. The extent and emergency value of this time period foreshortening and the added cost to be incurred as a result must be determined by and underwritten by those responsible for the Nation's over-all plan.

3. The normal profit influences controlling economy of production are supplemented by absolute limits of national capacity of men, material, and so forth, thus requiring allocations on a national basis.

All of these points take the industrial planning for defense beyond purely local company planning and require a coordinated direction from people informed in the Nation's total production potential and the current war plans. For military materiel, that means you gentlemen and those who have gone before you to such top mobilization planning responsibilities.

You will notice that except in the area of product determination, this top direction does not supplant, but merely guides the planning of industry itself. I am afraid we often take an ambitious interpretation of this phrase "guide and coordinate" and forget that to guide and coordinate you don't have to know all the details--in fact, you are usually better off if you studiously avoid them.

This top guidance and coordination requires more sound, relaxed thinking, and planning than it does feverish pencil pushing, collection of statistics, and so on. This is unfortunate since most of us--myself included--gravitate toward the latter since it is a more tangible task. However, you cannot substitute mass physical activity for mental acumen--and effective planning is largely the exercise of mental acumen by small groups. You gentlemen are among those expected to supply this ingredient.

If we are to assign this top guidance and coordination task to a small body of intelligent specialists, we must recognize that this group in harnessing industry's planning ability to the problem cannot command compliance but must "sell" cooperation. This implies a balanced understanding of industry's problems as it plans for defense mobilization.

Objectives of Industrial Planning for Defense

These problems should be viewed against the background of the major objectives. I suggest five objectives. You have heard other lists but these, I believe, encompass all lesser objectives.

Given the materiel to be produced both as to type and quantity (this by our military staffs) and given that portion of our national productive capacity available for military production during an emergency (this by National Security Resources Board), our simple objectives should be:

1. Selection of tentative producers on the basis of demonstrated capabilities and establishment of informative liaison with each.
2. Provision of springboard production or preparedness programs which provide a realistic base for the mobilization race to come.
3. Allocation of materials, manpower, and facilities in a broad pattern in line with realistic estimates of total emergency capacity across the Nation.
4. Development of individual speed-up programs to shorten the conversion or expansion period, including taking such physical steps as are economically possible in advance of the emergency.
5. Organization of a nucleus which can be rapidly expanded to take over direction of the Nation's total production effort during an emergency.

Now our job is to move as far as we can toward these objectives using the collective abilities of industry and government--wasting no useful ability and creating new activities only where none are adequate to meet the need. What then is the broad form of our idealized program of industrial planning for defense.

Broad Outline of Planning Activity

Broadly speaking, the military share of industrial planning is the definition of what is to be produced, the selection of organizations to do the producing, assistance to industry where necessary in making planning workable and then keeping score to see that our total actual capacity is not exceeded in paper planning.

In the other direction, industrialists must furnish the information upon which to base judgment as to product assignment, must develop practical and realistic mobilization plans in accordance with military requirements, have sense enough to cry for help when they need it and then actively support their program when once it has been cleared.

This assignment of responsibilities puts the military participation in the area of policy making, informed liaison, and score keeping-- a job with high-thinking ability content but relatively small staffs. Industry shoulders the responsibility for the mass of planning detail and performs the heavy man-hour job.

Let's quickly review the ideal sequence you've been over many times.

1. NSRB allocates military share of Nation's capacity.
2. JCS determines materiel requirements.
3. Each service, coordinated by Munitions Board, selects producers and defines what each is to make and what he has to make it with.
4. Each producer prepares his mobilization plans and determines his requirements for carrying out the plan--then reports to his service.
5. The services and Munitions Board integrate all plans and initiate revision or corrective action where unbalance is noted.

Keeping in mind the philosophies established earlier in this discussion and also this simple sequence of responsibilities--what are some of the problems that today keep us from full realization of our planning power?

#### Today's Problems

I am going to confine myself to areas of possible misunderstanding, confusing attitudes of mind and incorrect or confused areas of activity, rather than any specific "black list." I am going to mention several errors we seem to be slipping into--in full recognition that time limitations hold me from detailing the many progressive trends in our industrial planning for defense.

#### 1. The Attempt at Complete Coverage

One of the frequent weaknesses we find in business planning today is that an attempt is made to cover the waterfront without regard for the quality of the coverage. This same weakness can render our industrial planning for defense quite innocuous.

The entire scope of what we would like to do is often beyond our capacity to do. We then face the choice of doing a few things well or trying to spread our coverage with the certain knowledge that the

effectiveness of our work will fall off. Such attenuation of effort can result in a completely wasteful dispersion. Not only do you expend all and get zero effectiveness--which at least would still keep the problem within the family--but you may well, under pressure for performance over too wide an area, actually produce unsound and erroneous planning which can bring disaster.

This matter is of extreme importance since it is improbable that we ever shall find it reasonable or economical to develop dynamic, up to the minute mobilization plans for every potential participant, large and small, in our emergency production program.

I am told that during the last years of the war in Germany an interesting project in complete coverage was underway. The project, under the general direction of the Gestapo, was to completely forecast, organize, and catalog every thought of which the human brain is capable. Presumably all would then be coded and correlations run which would indicate potentially dangerous accumulations of isolated thoughts in an individual's brain and the allowable levels of such accumulation before extermination became advisable. By collecting information on each citizen's thoughts and properly collating it on perhaps a punched card system, a complete police coverage of a nation's thought would be obtained--a glow of electronic circuits, a bell ringing, and a bullet through the head.

Well, the story is probably apocryphal and one could consider at great length the interesting political possibilities of secret shunts in the computer circuits, but the point of the story is that the project fell through because the coverage was just too great. It would have taken a police organization larger than the nation's population--and then would have come the problem of policing the police.

I suggest that some of our industrial planning for defense leans in this direction. It would seem, therefore, that it is of primary importance that we carefully analyze the areas of industry in which planning is of critical importance, and then organize our limited planning forces to do a thorough, effective job in these critical areas--and maybe we have to let many areas of lesser importance just go hang!

This is not merely a matter of decision and instruction from the top. It calls for the generation of a working philosophy among all who participate in industrial planning for defense. It calls for the ability to select for attention the critical details of critical matters in critical areas of industrial planning. It calls for good, straight thinking and the knowledge that it is always easier to tell a subordinate to "cover the field" than to thoughtfully select specific points for action.

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To sum it up, let's not dissipate our planning strength. Let's be selective rather than all inclusive and do a good job on everything we select to undertake.

## 2. The Anchor of Detail

There has probably never been a planning program undertaken by man that has not been threatened by the creeping paralysis of statistical detail. Even Noah--the central figure in a planning program of more than passing importance to us all--must have been burdened with rosters, check lists, and so on, although he saved a lot of trouble by standardizing on requirements at the start.

We ourselves, in our defense planning, tend to become bogged down in lengthy consideration of minutia. It may go far beyond the point of diminishing returns to calculate the quantity of all magnesium shapes required by item, by month, by facility, but it is useful to know the approximate total tonnage required and to relate it against total capacity estimates. In this regard we should not be concerned as to whether the total requirement is 90 million pounds or 110 million, but that about 100 million pounds is about twice as much as our about 50 million pounds capacity. This being the case, we take action to step up the capacity or to cut back the requirements. You will note that our "about" estimates could have been off by 20 percent or more without changing our conclusion that here was a critical area for planning.

This is "order of magnitude" or "decimal point" estimating and is extremely useful in roughing out the problem and isolating critical areas for consideration--the process of selection made in our last point. Once the critical areas are blocked out, estimates can be refined, although this is but a relative and not an ultimate refinement, and more exact evaluations made.

For example, we estimate that we have about 50 million pounds magnesium capacity available over a given period. As a next step we can go to all potential users of this magnesium and ask for complete and detailed estimates of usage--quite a job.

Or we can get order of magnitude estimates that give us for:

Aircraft--between 30 and 60,000,000.

Incendiary bombs--between 20 and 40,000,000.

Instruments--between 50 and 500,000.

others--between 100 and 1,000,000.

The last two estimates appear ridiculous as estimates. But, although ridiculous as individual estimates, they are valuable in relation to the total picture. A glance shows that they are insignificant and may be ignored as major factors. It is with the first two we must concern ourselves as we look for means to cut requirements or justification of capacity expansion.

This same philosophy of avoiding details while locating key factors and controlling relationships can be extended to other areas of planning. Details are the easiest things in the world to accumulate a lot of, and the hardest to shake loose. Mankind has a knack of becoming completely hypnotized by figures and details to the extent that he overlooks these controlling relationships.

Not long ago a well-known company decided to keep its accounts only to the nearest dollar--let the pennies go. They were pleasantly surprised to find how much detail labor was eliminated. Reports came through earlier, tempers improved and manpower was freed to do more creative work.

Perhaps in our industrial planning for defense we can "drop the pennies." Or, working from the other end, do our planning to only two significant figures--certainly not more than three.

To sum up, let's do more of our planning in terms of "orders of magnitude," then back it up where necessary with detail; let's not unthinkingly collect reams of detail in the hope that post collection analysis may show us the reason we collected it in the first place.

### 3. Static vs. Dynamic Planning

-Of one thing we may be sure--our plans of this year will probably be out of date by next year. Our planning program should, therefore, contemplate review and revision of individual plans on something approaching an annual basis. Since an out-of-date plan is a dead plan, it follows that to omit the cyclical review and constant revision is to strew our wake with dead planning.

Our industrial planning for defense simply must be of a dynamic rather than a static nature. Again I know this makes the job tougher.

Perhaps one of our failings has been in not recognizing the dynamic, cyclical nature of planning--that for every man-year of effort put into a new plan this year, perhaps six man-months of effort must be put into keeping the plan up to date next year and every year thereafter until the need for the plan dies. This being the case we can very easily snowball our work impossibly as we continue to extend our areas of coverage each year. You don't consider the job done when a new destroyer is put into commission--maintenance can be quite an item. The same holds for a mobilization program.

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Other than disregarding the dynamic aspect of planning or else just not initiating any new programs, there are three things you can do.

1. Be selective--make each project count.
2. Avoid unnecessary detail--your effort will stretch farther.
3. Get more people.

The third point has its limits today, so the first two offer the real out; but whatever we do, don't let's initiate a bunch of programs we can't maintain.

#### 4. Overly Theoretical Planning

This is just a short one. You can base plans completely on isolated formula. You can base plans completely on the mass conjecture of individuals active in a given industrial field.

It is true that synthetic and theoretical planning lures us with possibilities of time-saving mechanical analyses and ease of revision or variation. Also, planning based purely on experience or "know-how" can become just an opinion poll. But, some of both is needed. The inertia of man is such that he leans toward synthetic, push-button labor-saving devices. Even if the synthetic planning formulae are 100 percent sound, which is an improbable situation, there are two things we can forget:

1. The result of synthetic planning is only as good as the data put into the formula--experience data.
2. Experience grows and alters course from year to year.

We cannot, therefore, do our planning in isolation. We must take continual readings on changing industrial experience and accommodate our planning practices to these shifts.

I recall reference to a comment of Albert Speer, German Minister of Armament, on this matter and I think it brings home the point so well that I'm going to quote Speer's statement directly. In answer to a question, "What fundamental errors do you blame for your low level of production (during the early war years)?" Speer says:

"The Reichswehr dealt with armament problems theoretically. Industry generally had no great inclination to participate in this preparatory work. After 1933, the Wehrmacht was therefore forced to build up (huge) administrative organizations \* \* \* These organizations, consisting of officers and civil service officials, conducted purely theoretical deliberations on rearmament, and became so

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large that they managed only to keep each other busy. They committed what might be called mental incest, and when Germany's rearmament got actively under way, all the mistakes which later led to the surprisingly low level of armaments production were already embryonically present.

"We were at a great disadvantage because our rearmament had been planned too long on a theoretic basis."

I can add nothing to this statement of Speer's in emphasis of the dangers of overly theoretical planning.

#### 5. The Disregard of Realistic "Springboards"

We speak of the "springboard"--that state of preparation or activity from which we expand production come M-day. Some good aircraft examples have been given to you. This springboard, say for light tanks, can vary from a solitary set of design drawings to a considerable volume production. And in some of our materiel we barely qualify with a solitary set of drawings.

From our springboard, mobilization production swings upward with two factors important--volume of production and time of achievement. This upward surge is not a straight line but in its early stages more in the nature of an exponential curve. Therefore, a relatively modest increase in peacetime production rates can pay tremendous dividends in more goods in a shorter time after M-day. With this background I turn to three points where we should constantly watch ourselves.

First is the matter of readiness and effectiveness of stand-by facilities, design, or manufacturing data, and so forth--anything that we "put on the shelf" to reach for in time of emergency need. We must certainly make sure that Uncle Sam won't reach quickly for that musket on the shelf only to find the action rusted fast. Our machine tool reserve program is an oft-cited example and one being given attention now. Stand-by plants need the same watchful eye. Our duplicate data programs, once they drop behind, become useless or even dangerous. We could kid ourselves as to just how ready we really are.

As an extension of this readiness of facilities, and so on, to go to work, there's a thought on the character of pilot line activities if they count in our springboard calculations. The old idea of a pilot line was to establish a manufacturing unit to manufacture enough of the product to prove it--the product--out. With the high volume manufacture of much of our modern, technically and mechanically complex materiel, the proving of the production methods becomes of equal or greater importance than merely proving the product. This simply because a technically superior product, unproduced, need never have been developed.

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I suggest, therefore, that as we examine stand-by or peacetime production programs as springboards, we must be certain that they are sound for rapid expansion productionwise. For example, if volume production of a difficult part in a guided missile servo system is unreasonable except on a specially developed high-speed automatic machine, that machine should have been developed and in use--even at 1/100 capacity--if our springboard is to be a fully effective one. Again, a chance to fool ourselves.

Second is the matter of balanced planning on components and supplementary equipments. The interdependence of industry in the manufacture of complex materiel is well known. How little use to have an active and valid mobilization springboard in being on all weather fighter airframes and power plants if search radar is neglected because of oversight, lack of funds, or other reason. Another way we can easily trick ourselves that we're ready when we're not. (It's only fair to add that my own impressions are that this balance is being given a great deal of attention in our military programs and that some fairly good work is being done.)

Third is the matter of realistic relation of mobilization requirements to peacetime preparedness measures and production programs. We said earlier that the mobilization volume achieved and the time of achievement are functions of the existing level of preparedness or production. Now just exactly what this relationship is for each materiel we probably can not say, but experience gives us some pretty shrewd "order of magnitude" relationships. If the "rule of three" holds for aircraft acceleration during the first year or two, it makes no sense to set requirements on a "rule of five."

I'm sure we won't slide into such an error as baldly as this--but we can get to the same spot by a chain of small slips--such as budget shaving, schedule postponement, and so on, that prevent us from creating the needed springboard. It may well be that we cannot in this country afford all the preparedness we could wish--certainly there is a point of diminishing returns somewhere--but let's not kid ourselves into thinking we're buying more protection in mobilization measures than we really are.

To check back--let's be certain that our stand-by, physical springboards are ready for the spring, let's be certain that the effectiveness of one program is not crippled by unbalance in subordinate programs, and let's be realists in projecting what lift our springboards will provide.

#### 6. The Production Development Gap.

This matter which I want to discuss briefly may not at first seem to belong in a discussion of industrial planning for defense. But I think that I can show you that it is the heart of some of our major springboard problems.

Our Nation's military preparedness relies increasingly upon new technologies and the new weapons systems derived therefrom. We might give brief attention here to the way these new systems come into being. Although other terms may be used, the normal road of development moves through basic research, applied research (application of basic research to specific problems), engineering development (creation of prototype), production and finally service in the field. The intelligence with which we guide our promising weapons developments through this sequence is critical in view of shrinking budgets and mounting defense needs.

The Research and Development Board has watched over the early steps of the sequence. The Board's greatest activity has been in applied research, but has included basic research as well as spreading the other direction through engineering development and into some production development.

The Munitions Board has centered attention on the production phase and the problems of procurement. However, service procurement agencies have to date been generous and included money in production (procurement) contracts to allow some production development work in connection with early production.

Today the situation is changing rapidly. Budget pressures have caused both Research and Development and Procurement agencies to trim fringe activities and concentrate funds on their major missions. Research and Development people instinctively draw back from spending money beyond the prototype stage. Procurement people want to put their limited monies into product, not engineering. So as both groups retract their areas of fringe coverage, the production development problem is left uncovered.

This "production development gap" is, therefore, the result of understandable pressures but is particularly unfortunate during this critical period. Our new weapons systems are becoming more complex and so the problem of reduction of complicated materiel to feasible production techniques is becoming more urgent. Furthermore, advances in manufacturing techniques in industry generally are obsoleting mass production experience gained during World War II. However, the application of these new manufacturing techniques to our new weapons can lag since peacetime production schedules do not force such application for capacity or economy reasons. Yet, if our collective national security rests upon our ability to move into mass production with the dropping of the first bomb, we had better be about this business--for it is a suicidal philosophy to assume that when we have created one successful new weapon model that we can create hundreds and thousands as well.

There are many in both within the military organizations and within industry who recognize this problem. One of the recurring questions is whose responsibility is it? There is a point in this

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production development beyond which industry cannot go without spending rather considerable monies. And much of this, such as special equipment development, is in a sense risk money. So is all development.

In view of the low-profit margins allowable on munitions production, it is difficult for some companies to underwrite extensive production development with their own money. Yet the development is critical. An interesting step in the direction of solution is the program of Air Force Industrial Planning's Manufacturing Methods Branch. I suggest that we, industry and military, could give a more sympathetic ear to the merits of such work.

There are other problems and errors to be avoided as we, military and industry, go about our industrial planning business. These are six that seem to cause much concern in the minds of both service and industry industrial planning people.

Now to quickly summarize the points we've made:

1. Industry is an old hand at successful industrial planning. Our major task here is to harness this aptitude to our broad, nationwide mobilization planning.

2. Government--and this means the military for munitions planning--can guide and coordinate the over-all program but can in no way delegate to industry decisions in three areas critical to industrial planning for defense:

Well-thought-out requirements schedules.

Balanced allocations of capacity.

Decision as to how far we shall go in buying preparedness via industrial mobilization measures in view of available effort, funds, and so on.

3. Potential weak spots in our total industrial planning for defense can be avoided if we hold fast to six philosophies as we go about our work:

- a. To be selective--work on only those critical areas of planning need in which we know we can do a good job.
- b. To avoid unnecessary detail--do more "order of magnitude" planning as a guide to critical spots where detail is required.
- c. To provide dynamic continuity--undertake to develop mobilization programs only if we can keep them up to date.

- d. To beware completely of theoretical planning--theory requires a foundation in experience and experience accumulates and can change rapidly.
- e. To evaluate springboards realistically--it's sometimes hard to face the truth.
- f. To make sure it's producible--if we can't make enough of the material to exploit its advantages, perhaps we never should have invented it.

These are matters of which we must be constantly aware. They are matters in which full understanding requires a strong appreciation of the mechanics and problems of both military planning and industrial programming. As representatives of the military, you gentlemen have a rich and unique opportunity. You, in effect, sit around the conference table with other executives, striving to transmit to them your viewpoints, and at the same time absorbing from industry its viewpoints and a true picture and realization of operating conditions, and you may be sure of industry's sincerity at this conference table since you, in turn, must speak for industry in military councils.

The tremendous scope of the undertaking of planning for industry in an emergency period continually emphasizes the responsibilities of military in other than strategic and tactical matters. War may not be inevitable, but it remains a threat, and there is little reason to suppose that it will ever become less than a struggle of total economics. Industry looks to you gentlemen, whose professional responsibility it is to prepare the Nation to meet ultimate eventualities, for leadership and guidance in their preparedness planning.

COLONEL MEETZE: Mr. Pocock is ready for your questions.

QUESTION: Mr. Pocock, your rather frank observations are refreshing and, I may say, encouraging. I would like to ask a question on something perhaps just related to your field.

You have alluded rather briefly to a lot of wheel spinning in some of the mobilization planning organizations in our Government. Under the democratic processes, I believe that is more or less necessary. Many men on the platform, when pinned down as to how to better coordinate them in the case of an emergency, would usually say that a superagency will spring up at the time, answer all questions, and make all the coordinations necessary. However, there are others, such as some elder statesmen, who believe that we ought to strengthen certain organizations at the top to do a lot of that, at least planning, on the basis of experience at the present time.

My question is: What is your point of view on that from your side of the fence?

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MR. POCOCK: I have a philosophy on that point that I was expounding to General Vanaman before I came in here. Maybe I can put it this way: If we would take all the detailed industrial plans that we have developed--without comment as to whether they are good, bad, or indifferent--and just throw all the reports over in file 13, we still would probably keep the most valuable ingredient of our industrial planning program, which is the training of people in the philosophies of industrial planning, the training of industrial people to work with the military problems and military people to work with the industrial problems.

Going on a step further, I believe I am a God-fearing Christian, and I would hope that He would give us this super-planning bureau that would rise full-blown the day the first bomb dropped. However, I think that the Lord relies on us to help a bit, and I do believe that one of the most important businesses that we have here today is to develop--and it can be relatively small--a group of intelligent, highly placed people who will be putting their brains on just this problem. They may just be making practice runs and may never be taken up on it, but that is what we must do. In my mind, that is one of the most important things that we can do today.

Does that answer your question?

QUESTION: May I carry that a little further? Do you think that this agency you speak of now would assist the Government and all its industrial planning agencies in better planning for themselves individually and eliminate a lot of spinning of wheels and the unnecessary detail?

MR. POCOCK: Let me get this straight. I do not think that we have to go outside the existing structure, the existing agencies, in order to do the job. I think that the task is one of shifting emphasis and paying more attention and giving more support and help to some of the top-planning functions, rather than spending a lot of our effort and energies down here in some of these detailed plans. When these plans finally come back and are pulled together, which is something we have not done as yet, they are going to cause quite some surprise.

We have never yet put the parts of the whole together. In some of the limited fields where I have had to, on an order-of-magnitude basis, put the parts of the whole together, I have attained some amazing answers. It may have come out to 900 percent of the anticipated emergency capacity.

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COLONEL MEETZE: Mr. Pocock, I believe you have answered all their questions.

I thank you very much for a most stimulating and informative talk on industry's planning. Thank you very much.

MR. POCOCK: Thank you.

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