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EXAMINING THE DRAFT DEBATE

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EXAMINING THE DRAFT DEBATE

The draft debate has heated up recently. Prominent retired military men, like Maxwell Taylor and William Westmoreland, have written columns supporting a return to the draft. Newsweek has called the draft inevitable. The Wall Street Journal has come remarkably close to endorsing "national service" -- something we thought we'd never see. What is this all about? Why is the all-volunteer force (AVF) so often deemed a failure? Are these claims valid? Is there any reason to believe a draft would be better? Will we be able to make it through the 80's without a draft? We will address these questions.

Let us start by admitting our prejudices. Economic theory provides several powerful arguments against conscription, and we believe them. A devotee of free-market economics is almost driven to ask, "What arguments can possibly be made in favor of conscription?" It seems they fall into four categories: cost, effectiveness, politics, and morality. We will address and evaluate each of these categories in turn. We'll spend the most time on effectiveness-oriented arguments because they are the key to most pro-draft positions. Our general evaluation of the debate is the same as that of the late Representative William A. Steiger. He said, "...those who criticize today's force and who look longingly to the alternative of the draft lack perspective. There is a tendency to forget that our armed forces have

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traditionally been made up of volunteers... And there's a tendency to forget the reports of low morale, low pay, bad living conditions, packed stockades, and high AWOL and desertion rates that plagued our draft Army..."

Since the AVF began, Congress and successive Administrations have given it grudging support in a helter-skelter manner. Pay raises have been denied, recruiting and retention budgets cut, and criticisms made that have not taken into account the fact that a draft is not a panacea for military manpower problems. Sometimes these criticisms require a disregard for the facts. Other times they just require a view of the world vastly different from ours.

Let us turn to the argument that the AVF is too expensive. It is, the easiest one to dismiss. The theory is quite clear. A draft is more expensive to society as a whole. Some people who are drafted either have good civilian alternatives or a strong taste against a military career. They would have required a very large sum to serve voluntarily.

Forcing them to serve imposes a considerable tax on them. Most of this tax is not just a shifting of the burden of supporting the military. It's an added burden that isn't borne by anyone in a volunteer framework. (The only exception to this is a Civil War style draft that allows the draftee to buy his way out. This is a capricious form of taxation, but an efficient one).

A draft is, however, a way of making the required cost of the military to the treasury less. But how much less?

Actually, military manpower costs have fallen since 1964, the last pre-Vietnam year, a year in which we were drafting people. In 1980 dollars, the outlay for active and reserve pay in 1964 was \$36 billion; in 1980 it was \$31 billion. The element of military manpower costs that has increased most since 1964 is pay to retired military personnel. Then retired pay was only 2.4 percent of total Defense outlays. By 1980, it was 9.3 percent. Pay to the active and reserve force has decreased by 14% in real terms since 1964. Over the same period real GNP rose over 60%. In other words, the fraction of GNP going to military manpower has been almost halved in the last 16 years. Military manpower expenditures in a volunteer force will not bankrupt us.

Where would the savings from a draft come from? General Westmoreland thinks it would come from a cut in the pay of first-term enlisted men. Congress seems unlikely to do this. General Taylor explicitly argues against it in his pro-draft pieces. If we allow first-term pay to keep pace with civilian pay a draft would yield a savings of only about \$250 million a year in recruiting costs at current force levels. So much for costs.

When people say the AVF is too expensive, they're really saying our security demands a larger or higher quality military

and that Congress isn't willing to pay for it in the budget. So we must hide the true cost by taxing junior military personnel. We might note the similarity between this argument and the one advanced for the excess profits tax on oil. The Carter Administration and Congress wanted to subsidize alternative energy programs, but didn't want to raise the deficit to pay for them. A new tax was needed and the suppliers of energy were a target of opportunity. It is interesting that the Wall Street Journal opposed this vehemently as leading to misallocation of resources. The draft -- an excess youth tax -- a tax on the suppliers of military manpower, somehow strikes them differently.

Imperfect analogies aside, this is a difficult argument to totally dismiss on theoretical grounds. Who can say with certainty when defense becomes excessive? There will always be those who think we're flirting with disaster if we don't devote more resources to defense. Many of these people will tend to feel that the issue is so important that it's worth the cost of a draft. They take as given that a draft will yield a more effective military. Enough more effective to be worth the cost. But will the draft provide a more effective military? What's the evidence?

Let's talk first about quantity, then we'll turn to quality and finally to arguments about the fighting spirit and morale of conscript and volunteer forces.

It is widely believed that the AVF is not attracting personnel in sufficient numbers now and certainly can't cope with the shrinking youth population of the late 80's. This argument is largely groundless. There have been occasional recruiting shortfalls. But, for the last five years the size of the total force has never fallen below 99 percent of the size authorized by Congress. Today, in fact, it is slightly larger than authorized (8000 more than 2,042,000). If force sizes are increased, it is estimated that every 1 percent increase in accessions will require about a 1 percent increase in first-term pay. Even the decreasing youth population of the 1980s poses no unprecedented problems. The 1989 youth cohort will still be as large as the one we ended the draft with in 1972.

Currently the military is taking about 21% of the eligible males in the youth population. Even with the planned force build ups, this is only expected to rise to 28% by 1987. In 1970, when the Gates Commission recommended ending the draft, over 40% of the eligible males were entering the enlisted force. We have gotten, and continue to get, enough bodies to fill the ranks. But can we get the right kind of bodies?

The best predictor of success in the military is graduation from high school. Today 78% of enlistees are high school graduates, equal to the proportion in 1971. 89% of the enlisted force is made up of graduates, the highest in history.

How about test scores? They also predict performance, though not as well as high school graduation does. In the last three and a quarter years of the draft, 22 percent of accessions were in mental category IV, the lowest acceptable group. In the first eight months of this fiscal year we are down to 17% category IVs. Category IVs in the Army are up just a bit, from 23% to 27%.

To be sure, there have been some quality problems. In the late 70's we were taking in more category IV people than we realized, because of errors in standardizing the entry tests. But this error cannot be blamed on the AVF.

Still, there's no disputing that we had some bad recruiting years in the 70's. How did that happen? Will it happen again? There has been a lot of study of the determinants of high-quality (and total) enlistments. Pay, unemployment, federal job training programs and the availability of recruiters all significantly affect recruiting. In the early 70's pay was high enough to attract a high quality force. By 1979 pay had fallen 11% relative to civilian youth earnings, unemployment was down, CETA programs had mushroomed, along with college aid programs, and the G.I. Bill had ended. We're not really crazy about the G.I. Bill because it pays people to leave the services, but it does draw some good people in. All these factors taken together account for a 40% drop in the number of high school graduates in the upper half of the mental distribution attracted by the

military. Since then military pay has risen, as has unemployment, CETA is taking big cuts, and recruiting budgets are up. These changes fully account for our current recruiting success. Research at the Center for Naval Analyses indicates that at most an additional 5 to 10% pay raise, relative to civilian wages, beyond the one planned for this year, coupled with the flexibility to adapt quickly with more recruiters when the economy improves, should get the recruits we'll need in the 80's without cutting standards.

There are other alleged problems with the AVF. These include a "high" rate of turnover among first-term personnel (though turnover in the military is less than among similarly aged people in the civilian sector), a "shortage" of physicians (though there are relatively more physicians in the services today than during the draft years, despite military physicians' pay being lower than pay in the civilian sector). Critics also note that career retention is a problem and blame it on the AVF. This is particularly unfair. They say the Navy is short 20,000 career petty officers. This has been true at least since the late 60's. Reenlistment rates have been above draft-era levels since the AVF was instituted. The first-term reenlistment rate was 19 percent in 1972 compared to 39 percent today. The reenlistment rate of personnel beyond the first-term was 74% in 1972 compared to 77% today.

It is not surprising that retention is higher now than it was under the draft. We've never drafted careerists. Those who want to join the military in the first place are more likely to stay than those who don't. A draft impresses into service some people with a strong distaste for being in uniform. This, in effect reduces the pool of potential re-enlistees. In 1971, only 45% of military accessions were people who were neither drafted nor pressured into enlisting by the draft.

There are several reasons for the shortages of experienced personnel we have suffered: The abnormally large numbers of personnel who have reached retirement age in recent years, the low re-enlistment rates of the draft era, and deteriorating pay since the AVF started. Initial reenlistment decisions are particularly sensitive to monetary incentives. CNA has estimated that re-enlistment rates typically rise by over two percent for every one percent increase in compensation. This means that a properly targeted set of bonuses amounting to an average increase in careerist pay of 10% could probably cure DoD's current retention problems.

Well OK, then, compared to the draft era, we're not doing so badly attracting individuals to the services and keeping them in, and we could do better without returning to the draft. But the military is more than individuals. It must turn individuals into fighting units. Some people say that the military must contain a representative cross-section of society in order to be trusted to

fight effectively. It's not clear why. No one seems terribly upset that more college graduates aren't pounding police beats. Still, let's look at the evidence on the representativeness of the enlisted force. Evidence about the socioeconomic status of recruits is difficult to develop, but Pentagon surveys show that while those in the very highest and lowest economic brackets are underrepresented, the force is otherwise proportionally representative.

A recent study has directly addressed the question of representation. It compared first-term enlisted military personnel to their fully employed counterparts in the civilian sector. The study's principal conclusion is that the AVF is attracting young men and women with backgrounds and abilities comparable to those youth who are employed full time in the labor market.

The report's more detailed findings include the following: Two measures of socioeconomic background, parent's education and occupation, show virtually no differences between armed forces personnel and the full-time employed. Both sexes in the armed forces are married at about the same rate as their full-time employed counterparts. There were no significant differences in reported health problems. The percentage of high school graduates is about the same in both groups, but more than twice as many in the armed forces expected eventually to be college graduates. Finally, on a series of questions used as a proxy for mental ability, armed forces personnel scored slightly higher.

In any event, it is hard to see how a draft could correct any imbalance that might exist. Even in the worst recruiting year under the AVF, 1979, the services fell less than 24,000 short of their goal of 340,000 recruits. A draft would draw from a population of almost two million males each year. A cross-section of that population would have little impact on representation in the military if drafted in the small numbers required.

Much of the discussion of the representativeness of the AVF revolves around race. It sounds like some people are saying, "We can't trust those blacks to fight for us." Perhaps it is uncharitable to say this. What is true is that the number of blacks serving began to increase during the draft era and grew even more with the end of conscription. A major reason for this increase was not the end of the draft, but the fact that a higher proportion of blacks are now high school graduates and qualified for service. Other reasons for increased black participation include the higher unemployment rate among young blacks than among whites, and the realization that the military provides fairer and better opportunities for blacks and other minorities than do many civilian institutions. Blacks have joined the services and made career decisions in large numbers throughout the AVF period because they wanted to.

A popular misconception is that blacks are disproportionately represented in high-risk combat jobs and other low-skill military occupations. In fact, according to the Army's fiscal year 1978 figures, 25 percent of black enlisted personnel were serving in infantry and other combat-related jobs, the same proportion as for the force as a whole. In all skill areas, the proportions are remarkably parallel.

General Westmoreland, among others, is concerned that the voluntary nature of military service today forces us to treat recruits too well. Strong fighting units develop the needed spirit through shared suffering, he says. Higher pay and the less frightening nature of today's military life has deprived our soldiers of this glue. Maybe he has a point, but to the extent data exist on this sort of thing, they don't bear him out.

By most measures, military discipline has improved in the AVF. This is reflected in reduced numbers of disciplinary infractions resulting in non-judicial punishments and courts-martial compared to draft years. In general, AWOL and desertion rates are lower than they were during the draft. First-term attrition has risen somewhat, but with good reason. In the AVF, individuals unsuited for service are usually discharged, rather than being incarcerated as was the case during the draft. All in all, discipline appears to be better under the AVF than it was under the draft. This is not surprising. The all volunteer framework guarantees that the people who serve will be those who are most motivated to do so.

In addition, it is unfair to give the AVF all the blame (or credit) for the more humane nature of today's military. It is hard to believe that the press and public would sit idly by while we returned to the abusive methods of the past. General Westmoreland will have to live with less downtrodden recruits than he would like, draft or no draft.

We have demonstrated, we hope, that there is no particularly compelling reason to believe that a draft will give us a more effective military force than the AVF will. But how about mobilization for war and how about the reserves?

Advocates of conscription argue that a functioning draft system is necessary to provide enough enlistments in the early stages of a major war, as well as to fill reserve units. This argument, although it has surface appeal, assumes that we engage in a totally unpopular war and that there would be no increase in enlistments at the outbreak of war. In fact, an increase in enlistments has accompanied major crises (like Berlin in 1961) and the beginning of every war this country has entered (even Vietnam). Also, a draft by itself does not guarantee "quick response." Draftees take just as long to train as volunteers. In any case, the Congress has responded quickly when it perceived the necessity for a wartime draft law.

The picture is not rosy for the reserve forces, however. Since the end of conscription in 1973, the selected reserve (personnel drilling regularly in reserve and National Guard units) has declined 12 percent, and the Individual Ready Reserve (the IRR, personnel serving the remainder of an initial 6-year military obligation after a period of active duty) has declined almost 70%. But about 250,000 recent military retirees not in the reserves would be suitable for recall, as would over one million recently discharged individuals. Since members of the IRR don't drill, they are not more ready to fight than those other former servicemen.

In any event, there is no necessary connection between a volunteer military and inadequate reserve forces. In testimony before the Manpower and Personnel Subcommittee of the Senate Armed Services Committee in 1979, Lieutenant General Robert Yerks, Army Deputy Chief of Staff for Personnel, noted that even with a draft the IRR would be suffering severe shortfalls, and that IRR strength would not be substantially above what it is now. With shrinking force levels and longer initial enlistment terms, IRR strength ebbed through natural attrition.

In general, the Reserves have been victims of appalling mismanagement and lack of support. Both the Pentagon and Congress concentrated on active force issues after the draft ended. Incentives for joining or staying in the reserves were grudgingly granted. The Army Reserve did not get full-time

recruiters until 1977, and the Army National Guard not until 1978. The lack of full-time recruiters and attractive recruiting incentives was largely behind the decline in the numbers of reserve accessions.

Finally, the Pentagon and Congress are taking action to improve reserve manning. The 1981 Defense authorization bill included a program to forgive student loans in return for reserve or active service. Other initiatives included enlistment and reenlistment bonuses, educational incentives, additional people to aid in training and retention counseling, a slight increase in funds for recruiting and advertising, new training and enlistment options, and policy changes to reduce attrition in the reserves.

During the draft years, there was no shortage of reserve "volunteers," but most reservists were avoiding active duty. Today's reserve force, though smaller, is better trained and more experienced. Since the draft ended, about two-thirds of the reserve accessions have been individuals with prior service in the active force: the comparable figure during the draft era was less than one-third.

Let us summarize what we have said about the effectiveness of the AVF.

In most ways the AVF has shown it can get the number and kind of people we're trying to attract. Some of the more

mystical arguments, like strength through suffering or the morale boosting power of upper middle class whites strike us as more than a little patronizing. We do need to maintain an adequate quality mix of Army recruits and to pay attention to the Reserves especially the Selected Reserves, but the problems are manageable and progress has been made.

Now we turn to political arguments for a return to conscription: first domestic political arguments, then international political arguments.

Some feel that for many years selective service was a unifying force in our society. There were draft riots during the Civil War and before World Wars I and II. During Vietnam, there were more than 1,000 anti-war demonstrations including 50 major ones between 1965 and 1968. Although the draft was not the specific target of all these protests, many of them included anti-draft speeches, draft card burnings and turn-ins, and sit-ins and walk-ins at Selective Service offices. Almost 200,000 registrants failed to respond to induction during the Vietnam era draft, when 1.8 million men were inducted. Ten percent of those called didn't show up.

Were these experiences socially unifying?

It is sometimes noted that the AVF will eventually cut the number of Congressmen with military experience. This is probably

true and probably irrelevant. Congress passes on plenty of items with little first hand experience. There is little evidence that decisions pertaining to defense have been either better or worse than those in other areas.

As to international politics, we are asked: How can the leader of the free world make other nations take its defense commitments seriously when it isn't willing to bear the pain of conscription? This argument falls into the trap of confusing inputs with outputs. It makes a virtue of wasting resources, sort of a potlatch theory of international relations.

Still, the Germans chide us for our lack of purpose. Pro-draft commentators cite the German draft admiringly, sometimes while noting the dangers of military unionism. Of course, the German military is unionized while those of Britain, Canada, Australia and New Zealand -- our partners in voluntarism -- are not.

Sometimes we are told that a draft unfortunately is necessary to signal our resolve to the Russians. It seems that it would be more impressive to show them that our taxpayers are willing to pay what it takes to maintain a strong defense rather than showing them that our voters are willing to make 18 year olds, who don't vote much, pay. Let's put the shoe on the other foot. If the Soviets ended their draft, raised military pay, and declared that Afghanistan had taught them the virtues of a

military with less personnel turnover, would we feel they were going soft on capitalism?

Finally we turn to the arguments about the morality of a draft.

Many will argue that it is not moral for individuals to participate in a society without serving to protect that society. This argument seems particularly illogical. Why does protecting the country from an external enemy require conscription, while protecting it from internal enemies, such as crime, fire, and disease does not? We do not draft police, firefighters, or public health officers. Why must we draft soldiers? But, there is more illogic to this argument. As we have already argued, conscription does not require everyone to serve, but only a very small segment of the population -- draft age men, and not even most of them. One can say that a new draft will be fair, but there's no way to be fair when only some are chosen. Concluding that a lottery is fair requires looking at people as mere members of demographic groups rather than as individuals. Conscription implies forcing only some individuals to protect society, so the rest of us may enjoy their protection at lower cost. Benjamin Franklin put it this way:

"But it may be said, to give the king's seamen merchant's wages would cost the nation too much, and call for more taxes. The question then will amount to

this; whether it be just in a community, that the richer part should compel the poorer to fight for them and their properties for such wages they think fit to allow, and punish them if they refuse? Our author [a legal scholar] tells us it is legal. I have not law enough to dispute his authority, but I cannot persuade myself it is equitable."

Another common objection is to say, "But wait, voluntarism is merely conscription of another form: economic conscription. The volunteer Army consists of individuals who have nothing better to do. Society is implicitly conscripting the poor and the black into the Army by economic means rather than political." This too is an illogical argument, perhaps even silly. For, after all, all of us are "economic conscripts." All of us do what we do because we have nothing better to do. But the argument also ignores the fact that the so-called "economic conscripts" are nonetheless volunteers. If the Army is more attractive to these individuals than is civilian life, are we to tell them they cannot be soldiers? Do we have that little regard, that much disdain, for military service that we think they must be protected from voluntarily serving in the military? It is hard to see how blacks, or morality, would be served by forbidding some blacks, who presently enlist, from joining the military, and then disproportionately taxing the rest who are able to join by paying them less than they'd get if we filled the ranks with volunteers.

So, what have we? On the one hand, we have voluntarism, the traditional American method for raising an Army. We have followed it for 171 of our 205 years. Voluntarism derives from this country's great respect for individual freedom, and the principle that the state should serve the citizen, rather than the citizen serving the state. On the other hand, we have conscription. It is deprivation of liberty, coercion, and a tax on the very expression of patriotism it allegedly promotes -- enlistment in the armed services. Also, it isn't a cheaper or more effective way of maintaining a military force.

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Weinland, Robert G., "A Somewhat Different View of The Optimal Naval Posture," 37 pp., Jun 1978 (Presented at the 1976 Convention of the American Political Science Association (APSA/IUS Panel on "Changing Strategic Requirements and Military Posture"), Chicago, Ill., September 2, 1976), AD A056 228
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Colle, Russell C., "Comments on: Principles of Information Retrieval by Manfred Kochen," 10 pp., Mar 78 (Published as a Letter to the Editor, Journal of Documentation, Vol. 31, No. 4, pages 298-301, December 1975), AD A054 426
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Colle, Russell C., "Lotka's Frequency Distribution of Scientific Productivity," 18 pp., Feb 1978 (Published in the Journal of the American Society for Information Science, Vol. 28, No. 6, pp. 366-370, November 1977), AD A054 425
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Simpson, William R., "A Probabilistic Formulation of Murphy Dynamics as Applied to the Analysis of Operational Research Problems," 18 pp., Dec 1978, AD A063 761
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