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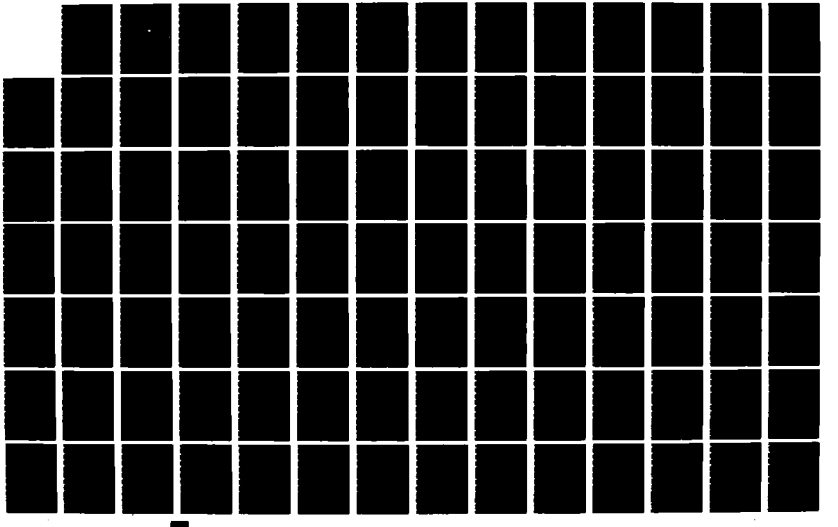

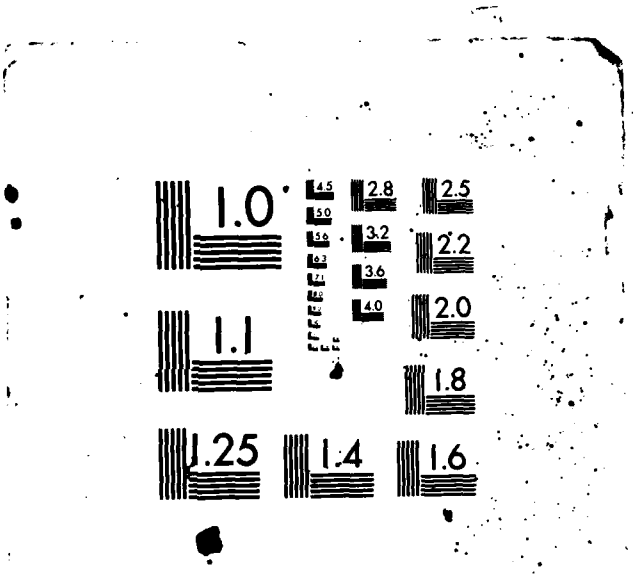

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INITIATIVE IN SOVIET AIR FORCE
TACTICS AND DECISION MAKING

by

Jeffrey Scott Johnson

June 1986

Thesis Advisor: Jiri Valenta

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This thesis discusses the evolution of initiative in fighter tactics of the Soviet Air Force. World War II forced pilots to break from restrictive tactics and to develop and use initiative in combat. By war's end, Soviet fighters' initiative greatly resembled western fighters'. However, since WWII technology and doctrine led to an increase in control measures and a decline in initiative. Despite this, veterans of combat have consistently spoken out for realistic training and the freedom for fighter initiative. As a result, emphasis on initiative rose in the late 1970's. But current Soviet pilots do not come close to having the initiative of WWII fighters and the recent emphasis on initiative may be short-lived. Current technology gives the Soviet Air Force the choice of developing or extinguishing initiative among their fighters. History suggests that, without a threat to their survival, the choice against initiative will be made.

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Initiative in Soviet Air Force Tactics and Decision Making

by

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ABSTRACT

This thesis discusses the evolution of individual initiative in fighter tactics of the Soviet Air Force. World War II forced pilots to break from restrictive tactics and to develop and use initiative in combat. By war's end, Soviet fighters' initiative greatly resembled western fighters'. However, since WWII technology and doctrine led to an increase in control measures and a decline in initiative. Despite this, veterans of combat have consistently spoken out for realistic training and the freedom for fighter initiative. As a result, emphasis on initiative rose in the late 1970's. But current Soviet pilots do not come close to having the initiative of WWII fighters and the recent emphasis on initiative may be short-lived. Current technology gives the Soviet Air Force the choice of developing or extinguishing initiative among their fighters. History suggests that without a threat to their survival the choice against initiative will be made.

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I. INTRODUCTION

The purpose of this thesis is to address the role of initiative in Soviet Air Force fighter tactics and employment. Contrary to a popular misconception, there is individual initiative in the Soviet Air Force and, not all Soviet pilots nor their commanders are incapable of individual decision making during a dynamic battle.[1] The following four questions set the basic framework for the research and findings of this thesis:

1) Is initiative important in fighter combat?
2) Do the Soviets believe initiative is important in fighter tactics?
3) Have the Soviets historically shown the ability to develop and use initiative in their tactics?
4) Do the Soviets currently stress or train for the use of initiative in fighter combat?

A. IMPORTANCE OF INITIATIVE

Is the ability to make decision independently in the heat of battle important for fighter pilots? Or, on the other hand, is flying a memorized set of maneuvers without any modification or adjustment sufficient for winning dogfights and delivering bombs? This question of the importance of initiative is dealt with only briefly because of the overwhelming evidence from testimonials of those who have been in combat. Events in war by their nature are not predictable with 100% accuracy. Battles are dynamic and flexibility and initiative are necessary to win. Creativity and initiative have been used to achieve victory since

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[1]An example of US preconceptions is in the article, "The Soviet Offensive-An Attack Pilot's View," by LtCol Kieling Jr., Air University Review, Mar-Apr, p. 66. He states, "the Soviet soldier is commonly a product of initiative deadening repetition." While this may be true concerning Soviet ground soldiers, this thesis will show that Soviet airmen have a history of initiative.

Biblical times; such as the defeat of the Midianites by a greatly out- numbered force of Hebrews.[2]

In modern air warfare "Historically superior pilot skill (technical superiority aside) has proven to be more than the equivalent of numbers." [Ref. 1: p. 110] This means more than the ability to fly an aircraft in a tighter turn than one's opponent; superior tactics and the ability of pilots to act and think on their own initiative has made the difference in winning and losing. During WWII the US-Japanese exchange rate for 1943-44 was 10:1 with longer pilot training given the credit for the difference [Ref. 1: p.111]. Further, even when fighting against a superior aircraft, the US managed a 10:1 ratio against the Chinese in 1950 due to "superior skills of the Sabre pilots." [Ref. 2: p. 22] Their skill was not just technical flying skill; but was individual initiative fully developed into the pilots' tactical thinking. Another example is Vietnam when Navy Top Gun training, which places a strong emphasis on initiative led, to a 400% increase in the exchange ratio, changing it from 2.5:1 to 12.5:1. [Ref. 3]. Finally, the most recent example of pilot skill and tactics incorporating initiative leading to victory was during the 1982 Israeli--Syrian engagement which yielded an 80:1 ratio in favor of the Israeli pilots [Ref. 3: p. 23]. Therefore, because of the demonstrated importance of having the tactical edge which includes the exercise of initiative, it is important to have a realistic view of Soviet tactics in terms of their flexibility and the initiative of their pilots.

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[2]The Midianites whose "camels could no more be counted than the sand on the seashore" were defeated by 300 Israelites. Judges, Chapter 7, New International Version of The Bible.

B. SOVIET OUTLOOK ON INITIATIVE

Do the Soviets believe initiative is important? Soviet military philosophy stress a "scientific" approach to fighting war. As A.D. Sokolovskiy wrote in Military Strategy,

> the current and profoundly scientific solution of all the theoretical and practical questions of waging a war must be regarded as the main task of the theory of military strategy and strategic leadership. [Ref. 4: p. 193]

However, the Soviets are also aware of the fast pace of modern warfare which may preclude the searching for the "scientific" solution to a given tactical problem.

> the commander must primarily learn to use his combat equipment in the dynamics of battle . . . sometimes in a relatively calm and static situation, an officer is prudent and correctly asseses all factors when giving a subunit its task. But as soon as the troops begin moving . . . he is incapable of using his knowledge with the speed demanded by battle. [Ref. 5: p. 121]

Speed and swiftness in battle have increasingly become part of Soviet warfare doctrine. A.V. Suvarov points out "procrastination is like death. An instant gives victory. One instant decides the outcome of a battle, one hour the success of a campaign." [Ref. 6: p. 192] Thus, the Soviets are aware of the need to make instant decisions in combat to the point where they are now exchanging "quality for the sake of speed." [Ref. 7: p. 121] [Ref. 8: p.197] The issue is do modern Soviet Air Force command style and tactics allow for the freedom of actions or initiative necessary to make independent decisions in combat. Chapter 2 discusses the balance being made between the Soviets' scientific philosophy and their realization of the need for initiative.

C. HISTORICAL PRECEDENCE

Today there are interesting parallels between the balance of forces of NATO and the Warsaw Pact and that of Pre-WWII Germany and Russia. Just as before World War II, the Soviet Air Force is rapidly becoming the largest in the world. In 1939, the USSR had 5000 aircraft [Ref. 9: p.32] and in 1941 alone built 15,800 aircraft [Ref. 10: p. 20] while Germany had 3000 and France 2100 in 1940 [Ref. 11: p.32]. Today, aircraft are being produced at such a rate, that NATO's entire Central European fighter forces could be replaced every two-and-a-half years [Ref. 12: p.1] (Each year the Soviets produce over 1,000 fighter aircraft. This would replace NATO's Central European force of roughly 2200 combat aircraft every two-and-a-half years.) [Ref. 13: pp. 11,21,153] However, despite their numerical superiority at the outset of Operation Barbarossa, having approximately 7000 aircraft to the Germans' 2000 on the Eastern Front [Ref. 14: pp. 35,38] the Red Air Force lost 4990 aircraft to the Germans' 179 within a week [Ref. 15]. It is postulated that these losses were a result of surprise and, perhaps more importantly, because of inferior training, tactics, and command style. However, following their crushing defeat, the Red Air Force learned significant tactical lessons which enabled them to eventually defeat the Luftwaffe. Chapter 3 traces this development of initiative, flexibility, and creativity in Soviet fighter, ground attack and bomber tactics.

This thesis is primarily concerned with initiative in fighter tactics; however, bomber tactics of WWII are also discussed because of the great impact bomber operations had on the war and the impact that the planning of bomber operations had on Soviet Air Force philosophy following the war. Soviet bomber operations developed into massive raids, known as Air Operations, involving thousands of aircraft. These

were orchestrated through extensive preplanning and centralized control. The large numbers of aircraft required a certain amount of rigidness; spontaneous initiative would cause confusion in these operations. As the air operations grew in size so did the influence of their commanders. Influence of the fighter commanders who highly favored initiative declined as their units became subordinated to Air Operation commanders. Following the war the commanders of these successful operations who were proponents of tight control and "scientific" solutions to tactical questions had a great deal of influence and impact on the Air Force's development--including fighter air.

D. CURRENT STRESS ON INITIATIVE

The final area of this thesis is the Soviets' current stress on initiative in fighter tactics. This addresses the questions: How much did commanders supporting preplanning overrule the lessons of initiative learned during WWII and is initiative still an important part of fighter tactics? Articles in Soviet military journals suggest the old Soviet leadership may be asking these same questions themselves and seeking answers from WWII. For example, "The command cadres of the Air Force, our pilots and navigators, must study creatively the experience of the past war, in order to extract everything of value that can be of use in combat training." [Ref. 16: p. 6] Also, General-Lieutenant of Aviation Pavlov asked in 1976, "is it possible that I am fighting for the past? Has the development of new equipment and weapons made frontline soldiers' mastery of combat, tactical findings, and creative approaches obsolete, stripping them of their instructiveness and educational value?" [Ref. 17]

To understand current stress on initiative relative to the very high stress initiative received during WWII, a content analysis was done on the Official Journal of the

Soviet Air Force from 1957 to 1984.[3] (Data was not available for years prior to 1957) This study (Chapter 4) shows the drop in emphasis on initiative through the 1960's as technology developed. The increased speeds of jet aircraft and the development of air-to-air missiles, improved radar and command and control systems accompanied a loss of emphasis on initiative. This trend reversed, however, in the mid-1970's and initiative has grown in emphasis into the 1980's.

In addition to the content analysis, recent tactical developments are analyzed to show the elements of initiative which exist in current Soviet fighter tactics. Finally, the tactics used in Afghanistan are discussed to highlight the Soviets' capacity for initiative combined with the strong tendency towards control and elimination of any need for initiative.

This thesis presents a balanced view of initiative in Soviet fighter tactics. Predominant in current US Air Force thinking is that Soviet pilots are suppressed under the obedience to tight control of the centralized command and control system. It is believed Russian flyers are good "technicians" but are not prepared for free flowing dogfights common in western training; the US has initiative but the Soviets do not. [Ref. 18: p. 83] This thesis challenges this thinking to present a more balanced perspective on initiative in the Soviet Air Force. Despite tight controls, there has been and is initiative in the Soviet Air Force . Given the opportunity, it presents itself effectively.

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[3]From the early 1900's to 1962 the Journal was titled Herald of the Air Fleet. In 1962, the title changed to its current one, Aviation and Cosmonautics.

E. DEFINITION

For this thesis, decision making primarily involves choosing tactics, methods of attack, what target to attack, the number of aircraft to use in attacks, etc. Decisions can be pre-planned in which case no initiative is involved. Pilots fly a memorized set of maneuvers by rote. This can lead to stereotyped predictable actions. On the other hand, in a changing environment, a pilot can choose at will his tactics or invent new tactics on the spot to fit the unique situation. This is individual initiative as used in this paper.

F. SOURCES

Research involved using existing works on the history of the Soviet Air Force and Soviet Military Historical Journals. Most important was the Soviets' discussion of WWII history, their command principles, and tactics. To balance the Soviet rhetoric on WWII events, data from the USAF Historical Studies as well as Luftwaffe commanders' narratives were used.

Careful attention was paid to the Soviet writings to balance their rhetoric with western facts and appraisals. It is important to remember the journals of the Soviet Air Force are written primarily for their own airmen and not for western readers while at the same time the authors are aware of US intelligence analysts reading their material. Thus, it is improbable that the Soviets would put blatant misinformation in these writings when they are used to keep thousands of their own pilots and commanders informed. Such a policy would require an incredible back-up network of writings to correct any wrong information and would run a great risk of having ill-informed aviators. On the other hand, the writings must be cautiously read because the controlled

press and closed society have the liberty to rewrite history as they see fit. Therefore, it was with a critical mind that the Soviet journals and writings were researched with the benefit of western history and intelligence analysis.

II. SOVIET INITIATIVE

A. THE SCIENTIFIC APPROACH

This chapter discusses what the Soviets think about initiative in fighter tactics. To understand the real nature of Soviet initiative, it must be defined in the overall context of Russian social and military culture. This chapter begins with a discussion on the Russian concept of war to form a base upon which the concept of initiative will be built.

1. Science as Ideology

Soviet thinking on war begins with Marx and Lenin. To communist ideology war is a manifestation of political-economic reality and is governed by the immutable laws of history. Marx's scientific study of economics set the foundation for applying scientific approaches and solutions to all aspects of life. "War teaches Marxism-Leninism is a socio-historical *phenomenon* . . . its essence can be revealed only by using the scientific method." [Ref. 4: p. 173] With this method, war and combat techniques are studied in the context of military doctrinal laws and military science. The scientific method is involved in the military from the broad aspects of doctrine to the details of tactics. "During peacetime, when there is an absence of combat experience, military science and theoretical foresight possess decisive significance in developing the methods to conduct an armed conflict." [Ref. 4: p. 275]

Military doctrine is the official policy of the Communist Party at the Soviet Union [Ref. 19: p. 74]. As Marshal N.V. Ogarkov stated, "Soviet military doctrine is a system of guiding principles and scientifically substantiated views of the CPSU and the Soviet government on the essence, character, and methods of waging war." [Ref. 20]

Military doctrine has two facets - "socio-political" and "military-technical." The socio-political side deals with the methodological, economic, social and legal basis of winning a future war. The military-technical side conforms with the socio-political and directs "military structuring" and methods for conducting combat operations. [Ref. 21: p. 240] Because party leadership determines doctrine, it is a non-debatable guideline in accordance with which the military leadership must function. In wartime the political aspect of doctrine is accentuated. As a Soviet textbook on the subject points out: "Politics determines the priority and strength of blows inflicted on the enemy." [Ref. 22] Military science on the other hand is theoretical laws and principles of warfare applied to military operations.

Military science differs from doctrine in that it is studied and debated by the military leadership [Ref. 19: p. 74]. Since the communist revolution, a scientific approach to war has been part of Soviet military thinking; V. I. Lenin emphasized that it is impossible to organize a modern army without science. [Ref. 23]

Combining doctrine with science, the Soviets operationalize the methods for conducting warfare in military art. Military art is composed of three main elements: strategy, operational art, and tactics. Each of these areas form methodologies for conducting warfare at different levels and sizes of battles. For example, strategy deals with fighting an entire war on a theater of military operations (TVD) level; a large geographical region which could, for example, include all of Western Europe. Operational art covers front and army levels of operations; a front is a geographical area within a TVD. There are roughly 3-5 fronts within a TVD and each front would have within it several armies operating. Tactics correspond to division or smaller size engagements. [Ref. 19: p. 75]

Science is a part of each of these methodologies. "The covert and profoundly scientific solution of all theoretical and practical questions related to the preparation and waging of . . . a war must be regarded as the main task of the theory of military strategy and strategic leadership." [Ref. 4: p. 193] This influence of the scientific method is very much a part of air force strategy and tactics. For example, leading Soviet Air Force tacticians stress the role of science in fighter tactics:

> Simulation or modeling has been employed for quite some time as a method of <u>scientific</u> cognition in the area of military scientific investigation, personnel study, immediate preparation and conduct of combat. It is quite understandable that modeling could not ignore tactics . . . .including dynamic models of air combat, airstrike on a ground target (individual stages), or a combat air mission in general. [Ref. 24: p. 77]

2. <u>Science as Control</u>

In addition to the ideological emphasis of the scientific method, Russian culture is predisposed to this approach. Culturally, man is viewed as inherently evil or sinful and therefore must be controlled [Ref. 25]. This perception of man has been manifested over the last several centuries as the secretive collective leadership of the village Mir[4] ; the powerful centralized control of the Tsar; and the tight control of the current party apparatus with its secret police and powerful methods of controlling the population. The Russian leadership has a historical and cultural conditioning that makes a scientific approach very attractive as a tool of control.

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[4]Mir is the name of the old leadership committees of villages. Individualism was suppressed because the survival of a village depended upon group efforts against the elements of nature and neighboring villages.

Through the scientific approach pilots and commanders can be controlled. If all tactics are decided upon by a scientific deduction, then, all pilots will fly the tactics in the prescribed manner without question. Elements of creative thinking or initiative could be done away with by prescribing how every aspect of combat should be flown. Likewise, through the scientific method, some elements of chance, such as, not knowing what tactics pilots may fly in a given battle could be eliminated and commanders and planners could then mathematically insert their fighter forces into the overall "scientific" battle plan.

However, the scientific approach to tactics has not always been completly accepted by the Air Force. Instead scientific methodology has had an evolutionary growth. The emphasis on a scientific approach in the Soviet Air Force increased greatly in the late 50's and early 60's. New technology brought improved ways of monitoring and controlling aircraft and reducing some of the uncertainties of how pilots were flying. An example of this increased emphasis in control is the development of a system for recording each individual aircraft's flight parameters. The system, known as the SARPP-12, makes analog computer printout of the aircraft's altitude, airspeed, angle of attack, G-loading, etc. An example of 5 of these recordings is shown in 2.1 This type of monitoring capability allows the flight instructor or squadron commander to check each pilot on how accurately they fly the approved tactics and techniques. Once a mission is flown, the tapes can be down loaded and the entire air scenario recreated mathematically. Deviations from approved methods or tactics could then be easily spotted and corrected.

In addition to monitoring equipment to implement the scientific approach to tactics, "Military Science Societies" were introduced into Air Force units. The introduction of

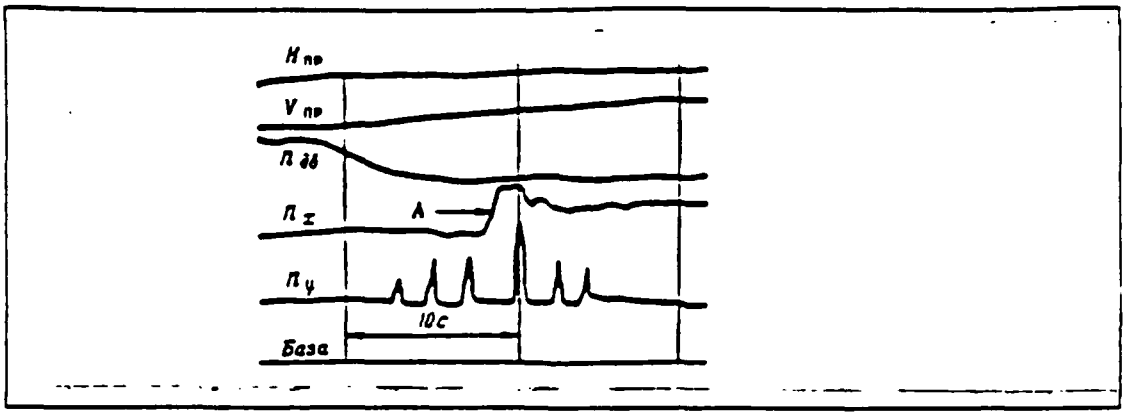

Figure 2.1 SARPP-12 Printout.

these units was justified by the leadership saying such societies had existed in the Red Army even during the Civil War. Therefore what was good for the revolutionary fathers is good for us. Also, these societies were described as "playing an important role in the Red Army and in heightening the quality of combat training." [Ref. 27: p. 56]

The objective of these military science societies was to "seek out the most efficient methods for conducting combat operations." [Ref. 27: p.56] To do this, mathematical computations and equations for all aspects of flying were created. For example in a 1958 article by Col V. Ya Kudryashov and Lt Col P.A. Nikitin, a scientific method full of mathematical equations sets out to determine the combat capabilities of fighters and predict the outcome of an engagement between two fighters. [Ref. 28] (See Appendix A). The purpose of this approach is to remove the need for individual creative thought during battle. Instead pilots execute a scientifically computed combat maneuver against their opponent.

To be successful, the scientific approach has to conceive of every possible combat situation and determine the scientific "best" solution to each situation. "Using

the language of cybernetics" functional models representing "not only one's own behavior, but also that of the adversary" are made to represent reality. [Ref. 28: p. 78] Here the scientific method begins to break down. The task of simulating or predicting all of reality or every combat situation is impossible. Combat is not like the inevitable path of history which Marxist-Leninist scientific approach is based upon. Combat is unpredictable and Soviet tacticians of the 50's realized this. For example, "the situation can change suddenly even when the crew is aloft. The flying personnel and commanders aloft will have to react somehow to this change and make independent decisions." [Ref. 29] Thus, as the scientific approach was imposed upon or implemented in Air Force units, it encountered resistance from unit pilots. Elements of this resistance can be seen in the articles in the Air Force Journal, such as the above quotation, written by pilots who realized the futility of trying to make pilots mechanical robots. It is evident that those who resisted the scientific societies in their units believed the scientific societies could extinguish creativity in flying. To counter their arguments and resistance, Guards Maj I.P. Pavlov wrote, "some still did not understand the importance of military science work . . . we explained that science work not only contributes to the creative growth of the officers but also helps solve problems of training and education." [Ref. 27: p. 57] He goes on to say that military science is the true source of innovation and creativity in flying and through these societies units and individual elements will be at a higher state of combat readiness [Ref. 27: p. 59].

Despite Pavlov's arguments, pilots continued to voice their dissatisfaction with the scientific approach. In rebuffing Col Kudryashov's formula for predicting combat mentioned earlier, articles were printed calling the

scientific approach "an unjustified method." [Ref. 30: p. 100.] They challenged the quantification of all aspects of flying on the grounds that a pilot's "personal qualities" such as initiative can not be truly quantified. [Ref. 30: p. 100]

Such resistance to the scientific approach remains in Air Force units today. In a 1983 Aviation and Cosmonautics article "Tactics and Modeling," the author speaking on the practical application of scientific models states, "some pilots greet some recommendations with skepticism." [Ref. 24: p. 78] As a result of the continual tension between the scientific approach and those who favored continued creativity in fighter tactics, it is believed a synthesis between these two schools of thought evolved. The synthesis is most apparent in the writings of early 1980's; however this is simply the tail-end of the long process of rise and decline of emphasis on initiative that has taken place since the beginings of the Soviet Air Force. Details of this process are developed at length in subsequent chapters. The synthesis is a mixing of traditional fighter pilot techniques of initiative, creativity, and gut instincts with scientific modeling to increase the probability of success in an unknown situation. Speaking of conducting a fight, Col. A Krasnov, a doctor of military sciences stated in 1982, "complete information does not and will never exist. Therefore, the commander and pilot must utilize fragmentary, obsolete information, experience and intuition." [Ref. 31: p. 20] Also, other authors point out "modeling of combat training missions . . . is the search for optimum solutions." However, "modeling in no way contradicts existing traditional techniques." [Ref. 32]

Also, the experiences of WWII are described in articles which synthesize creativity and science: "new tactics were born right in combat, since in the air unforeseen

situations frequently arose, situations which required non-standard actions. Tactical discoveries, however, were always made on the foundation of amassed experience." [Ref. 24: p. 70] Again, the synthesis combines the emphasis on traditional approach with scientific modeling. Modeling is expressed as a way of gaining the "massed experience." Col Krasnov remarks that simulation of various phases of flight is most helpful. "This method develops habits and ability for analyzing a tactical situation, for assimilating combat procedures better, for seeking innovations and for displaying initiative." [Ref. 31: p. 21] He goes on to say that models and simulations can reduce as much as possible the unknown factors in flying. "But no matter how complex the mathematical procedures we may see, we can never calculate everything today." Also, "no mathematical tool and no computer can eliminate or even reveal mistakes in the logic of a pilot or commander." Thus, he states the conclusive synthesis:

> The dialectics of decision making and development of the different variants of combat fights are such that the will, experience and intuition of the commander intertwine closely with strict and laborious calculations. Unfortunately, we still encounter commanders who rely only on common sense when they make their decisions and develop different variants of a combat assignment, attempting to arrive at a quick solution without making any calculations. Experience has shown that this leads to stereotypic decisions and actions, and that sizeable losses may result in a combat situation. [Ref. 31: p. 25]

This synthesis is a reflection of the changes in the cultural environment and attitudes within which individual creativity can be exercised. This background sheds some light on the development, suppression, and revival of initiative in the Soviet Air Force which is the heart of this thesis.

B. COMMAND AND CONTROL AND INITIATIVE

In addition to the ideological-scientific framework surrounding initiative in military thinking, another aspect of the Russian or Soviet concept of war impacting on flexibility, creativity, and initiative in tactics or command style is the command and control network of Soviet military forces.

1. Centralized Control

The village Mir, mentioned earlier, is the cultural origin of centralized command and control [Ref. 33]. The peasant villages were controlled by the small group of village elders. The villages in turn were controlled by land princes who formed a small circle of power centered around the Tsar. Following the communist revolution and the purges of Stalin, the government and military leadership was made up primarily of men with peasant backgrounds. Culturally, it is very natural for them to operate within a centralized command and control system.

The Soviet command and control system reflects the Russian culture. As Admiral Stansfied Turner said while Director of the Central Intelligence Agency, "The Soviets have a command structure that goes all the way up the line and is very tightly controlled because of the kind of society they live in." It is based on a top down concept "with command and control highly centralized and largely directed from Moscow." [Ref. 34: p. 58] Typically, the first Secretary of the Communist Party is also commander-in-chief of the military. This was the case with Stalin during WWII.

> Stalin's system of control during WWII when he was concurrently Chairman of the State Committee of Defense (GKO), Supreme Commander in Chief of the Armed Forces, and General Secretary of the Communist Party is described in Soviet texts as an ideal organizational structure for any future war. [Ref. 19: p. 398]

All power over the military centers on this one man and the defense council. From the top down, tight lines of control attempt to keep as much decision making power as high up the chain of command as possible. "The rigid top- down approach to C3 is evident throughout the Soviet military establishment . . . control is maintained at the highest possible level." [Ref. 34: p. 61]

The centralized command and control system has impacted the command style of pilots and low level commanders in different ways depending upon the military doctrine at the time. This has been reflected in the doctrinal transitions under Stalin, the doctrinal change with the coming of the nuclear era, the doctrinal shifts of the late 1960's and reorganization in the late 1970's to early 80's.

2. Stalin's Era

Under Stalin's leadership, the command and control changed several times. From 1937 to 1940, a dual command system--political and military ran up and down the chain of command. Political commissars held positions equal in status with their military counterparts at the various command levels. [Ref. 35: p. 91] The commissars fettered the actions of the military commanders by hindering their decision making based on their military expertise. The system was not conducive to initiative nor was it effective in managing military operations. In 1940, the system was streamlined with the removal of the commissar. His position was replaced by a political deputy subordinate to the military commander. The command structure returned to a dual system in 1941 and reverted back to a single command in 1942. [Ref. 35: p. 91] Stalin's vacillation ended with a concentration of control in the hands of the Supreme High Command or Stavka. This concentration of forces impacted on the organization of the Air Forces.

Prior to the 1942 reorganization, the Soviet Air Forces were composed of five major components.

1) Aviation of the High Command (Aviatsiya Glavnogo Komandovaniya) - long range bombing
2) Front Aviation (Voyenno-Vozdushnuyye Sily Fronta) - Air Forces of the military district and fronts
3) Army Aviation (VVS Armii) - Air Forces of the Combined Arms Army
4) Organic Aviation (Voyskovaya Aviatsiya) - Air squadrons at corps, division and lower levels.
5) High Command Reserve. [Ref. 36: p. 39]

With the reorganization, the Stavka established Long Range Aviation (LRA) (Aviatsiya dalnego deystriya, ADD) which combined the bombers under their command with transports and other bombers formerly assigned to frontal aviation. All the bombers were now concentrated into LRA. In addition, the front and army VVS (Voyenno Vozdushnaya Sily) units were combined into large groupings called air armies (Vozdushnaya armiya or VA). Each front was given an air army whose commander advised the front commander. The front commander in turn responded directly to the plans of the Stavka. The high command could now move easily, reallocate and concentrate the Air Force fire power in massive air operations. [Ref. 36: p. 44] With the reorganization, air divisions could no longer operate autonomously [Ref. 35: p. 141]. Centralized command and control made air power more responsive on a large scale but reduced the amount of independent decision making at lower levels. The large formations involved in massive offensive operations had to strictly follow the Stavka plans in order to integrate all the participants.

> During the Great Patriotic War, the theory and practice of conducting aerial operations received further development. These operations were conducted under unified control, over a wide front, and with the involvement of the powerful forces of Frontal Aviation. [Ref. 37]

The use of overwhelming mass during WWII operations necessitated the development of very centralized command and control. To control the masses and remove as much chance as possible, preplanning under the direction of the high command was used. This preplanning and centralized control remained the standard until the advent of nuclear weapons and the death of Stalin.

3. Nuclear Era

The advent of nuclear weapons brought new doctrine and science into Soviet military thinking. New doctrine stated the next war between capitalism and socialism would inevitably be nuclear. Military science determined the best way to win this war was to be prepared to preempt any US nuclear strike. "The Armed Forces of the Soviet Union . . . must be prepared above all to wage war under the conditions of the mass use of nuclear weapons." [Ref. 4: p. 193]

The destructive power of nuclear weapons meant "the initial period of war will be of decisive importance for the outcome of the entire war." [Ref. 4: p. 210] Thus, to deal with this problem, the command and control must be well planned before the outbreak of hostilities. In this planning, the Soviets maintain their centralization.

> Strategic operations of a future war will consist of coordinated operations of the services of the Armed Forces and will be conducted according to a common concept and plan and under a single strategic direction. Strategic operations are strictly correlated on the basis of a single strategic plan with unified centralized command. [Ref. 4: p. 287]

Despite the plan for centralized control, the Soviets are aware that under conditions of nuclear war, communications may be disrupted and all command and control lost. How will low level commanders function if they can no longer receive orders from the high command? From a command and control structure standpoint, the issue has not been dealt with in Soviet writings.

A solution to the loss of communications is a decentralization of command. Authority would have to be delegated to the lower level commanders and along with the authority, commanders need to have the initiative to know how and when to use their assets given the situation. Structurally, the Soviet command system appears not to have dealt with these problems until the reorganization in 1979. Prior to that reorganization, doctrine made a return from concentrating on nuclear war to once again thinking about conventional war.

In the late 1960's, a doctrinal change about the inevitability of nuclear war began to take place. The Soviets continued to be prepared to fight a nuclear war; yet, now their primary objective was to be able to throw the US off the continent of Europe through a conventional combined arms operation.[5] The return to emphasis on conventional war allows the command and control network to remain centralized. As stated in the Soviets' Dictionary of Basic Military Terms, "centralized command and control is the command and control principle recognized in the Armed Forces." However, it is interesting to note that the dictionary goes on to include in the list of requirements for troop command and control "flexibility and quickness of reaction to changes in the situation." [Ref. 38] It is postulated that as Soviet military leaders began to re-examine conventional war and, at the same time, deal with the problems nuclear war poses--that is to necessitate some

[5]There is considerable debate in the intelligence community over the Soviets' emphasis on nuclear or conventional war. Professor Michael McGuire of the Brookings Institute pointed out in a 27 Feb 85 lecture that it is clear conventional war is preferable to the Soviets over nuclear war and that the major rebuilding and restructuring of the conventional forces throughout the 1970's is a good indication of the Soviets' intentions to become capable of delivering a conventional offensive blow to Western Europe.

decentralization of command authority--a mixture of centralized control and allowance for decentralized execution and initiative developed.

Note in Marshall Grechko's statement in 1975 (below) the combination of technical solutions to command combined with the officer's own ability to deal with a fast changing situation. Such is the mixture of science, centralized control, and personal initiative.

> The task is to increase in every possible way the efficiency of work, to expand the operational-tactical outlook of commanders and staff officers, and to improve their ability to act during tense and dynamic situations with the complete and rational use of available technical means of control. [Ref. 39]

One way in which the Soviets are building this mixture is through improved automation/computerization of the command and control network. The system, Avtomatizirovannaeiia Sistema Upravleniia Voiskami(ASUV) is an attempt to increase the volume of information coming to isolated commanders in order to improve their decision making capability. [Ref. 40] Such a system would allow a faster response time and facilitate centralized control in a fast paced conventional war.

In addition, the Soviets have reorganized the military command and control lines recently which could facilitate the exercise of initiative at lower levels of command and allow faster control from the top through automation. This reorganization particularly affects Air Force operations. The new structure is basically the establishment of a war time command organization during peace time. The new organization is believed to contain the following entities:

1) Aviation of the High Command - primarily bombers
2) Aviation of the Front - fighters, fighter-bombers and reconnaissance
3) Army Aviation - helicopters, ground attack aviation [Ref. 41]

The new organization is quite similar to the late WWII command discussed earlier. The High Command has direct access to its bomber force and front commanders may have fast access to air power via short lines of control. Also, air assets are now autonomously assigned to support army units. Army commanders and perhaps even division commanders operating with the Army Aviation commanders will be able to allocate air power where they see fit. This short chain of command allows fast reactions to a dynamic battle. Hand in hand with this allocation of force must be the commander's initiative and ability to assess the battle situation, make a decision and act on it. An Army Division having its own air power to operate independently is decentralized authority, a good environment for initiative.

Thus, the new system is a mixture. It is a wartime command network streamlined to allow centralized control by the Stavka down through the front to the Army; yet, also decentralized in its allocation of independent assets to the lowest level. Such a decentralization may be an attempt to be prepared in the event of a sudden nuclear war. The assets and war command lines are in place as well as the disposition to operate autonomously in the event of loss of commands from the top. However, it is most likely not just a preparation for lost C3 during nuclear war but a shift in doctrinal principles.

It is postulated that this mixture of centralization and decentralization is evidence of two approaches to warfare that exist among the Soviet military leadership. One approach is the centralized control school of thought. This approach desires complete direction from the top and thorough preplanning of all actions below. As will be developed in detail in the following chapter, this school of thought in the Soviet Air Force developed out of the large

air operations of WWII. The other approach realizes the need for decentralized control and initiative at the lower levels. This group, as will be shown, originates with the fighter pilots who survived WWII through their cunning and initiative. The emergence of the latter school of thought in a revised command and control system after nearly 40 years suggests that initiative has been kept alive in the Soviet Air Force since the war and may have some renewed influence in the current Soviet Air Force.

Having discussed the military-political culture as well as command structure, the concepts of initiative and flexibility shall be defined within the context of the Soviet military.

4. Military Leader and Initiative

Fundamental to the Soviets' concept of initiative is that an individual leader can be taught to think creatively and with initiative [Ref. 42: p. 6.]. Initiative is not "native wit" but is part of a decision making choice. As discussed earlier, the scientific solutions to as many problems as possible are modeled. To the Soviets one way initiative is exercised is by chosing the correct decision for a given situation among the ones already tested. For example, in the Soviet Dictionary of Basic Military Terms initiative is defined as a creative decision based on situational characteristics and a learned set of scenarios. [Ref. 42: pp. 8,9] Lt General K. Babenko said of initiative,

> a commander reaches decisions on how to fulfill an order by virtue of much creative work: analysis of all available data, meticulous calculation of each combat option, comparison of these options, and the use of creative imagination and intuition. [Ref. 43]

To the Soviets, repetitious exercises and contingency planning aids development of initiative. Whereas in the West, initiative is considered to be spontaneous,

creative, original ideas less tied to a structure. In addition, contrary to a western concept, the Soviets believe regulations improve success of initiative. "Firm knowledge of regulations and a deep comprehension of their concepts is the guarantee that in every situation each officer . . . will be able to quickly evaluate the situation and make the correct decision." [Ref. 44]

However, even the Soviets appear to be willing to put aside regulations and follow their own initiative if the situation warrants it. For example, "procedures are included in the regulations;" but if time and circumstances do not permit it, then the regulations should not be followed like a "blind alley." Also, cunning, initiative and self-reliance are rewards for those soldiers who "refused to pay unimaginative and meaningless lip service to formalistic regulations." [Ref. 45: p. 13] However, this is not to say the Soviets condone complete individualism and freedom of action. To the Soviets, the best kind of initiative is informed and understands the overall context in which a decision is being made. "Intelligent initiative" is based on "deep analysis" and "taken in accordance with the general plan of the superior commander." [Ref. 45: p. 7] As the soldier encounters unexpected or unforeseen situations, he is expected to decide what to do in order to carry out his assigned mission and that is through "intelligent initiative." [Ref. 45: p. 14]

So it is within a slightly different context that the Russians think of initiative. Yet, as will be evident in the following chapters, their different approach to initiative, creativity and flexibility has not kept them from using it quite effectively. The Russians appear almost paradoxical in terms of initiative. Culturally, centralized control suppresses individual expression and should inhibit initiative, but, at the same time, other environmental

factors such as scarcity of food, supplies, survival itself have forced many to be very creative and innovative in order to survive. Therefore the extreme generalization that Soviet citizens do not think for themselves and lack initiative is false. Some of the world's greatest composers and inventors have come from Russian culture. The result of initiative and creative thought is the same as in the west; however, the thought process and culture surrounding the exercise of initiative in the Soviet Union appears different.

A model was constructed to illustrate the paradoxical operation of initiative in Soviet military decision making. The model shows the process of combining what could be considered in the West environmental elements which restrain initiative (inhibitors) and those elements which encourage initiative (inducers). Elements of inhibition have been discussed in the context above.[6] They include: the rigors of the scientific approach to problem solving, including the modeling of tactics and rigorous repetition flying only the same approved tactics over and over; strict discipline and adherence to regulations; cultural perceptions on individualism, group decision making, and centralized control resulting in a constricting C3 network. The inducers of initiative are: being approached by a new and unknown situation to which no scientific solution has been memorized; the instinct for survival during combat; functioning autonomously when command and control is cut off during nuclear war and decentralized command and control; combat or even daily operations when scarcity of supplies require one to use initiative to survive.

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[6]For a detailed discussion on these elements and the process of initiative in the Soviet military with comparisons made to Western concepts of initiative, see Initiative and Innovation in the Soviet Military, Zey-Ferrell, Parchman, and Gaston, Texas A&M, 1984, particularly pp. 21-27 and 37-43.

These two poles within the framework of the decision making environment form the elements to be drawn upon for a decision. When faced with a situation requiring an independent action, a decision maker can draw on the elements of inhibition or inducement and uniquely combine them. The result is an observable action which indicates the presence or absence of initiative and which elements dominated the decision makers frame of mind. (See Figure 2.2). In some cases the combination of positive and negative result in stereotypical actions. Whereas in other cases new, innovative, independent actions are a result of a combination with initiative involved. As will be seen in subsequent chapters, Soviet Air Force officers have a history of combining these elements and coming up with initiative since before World War II.

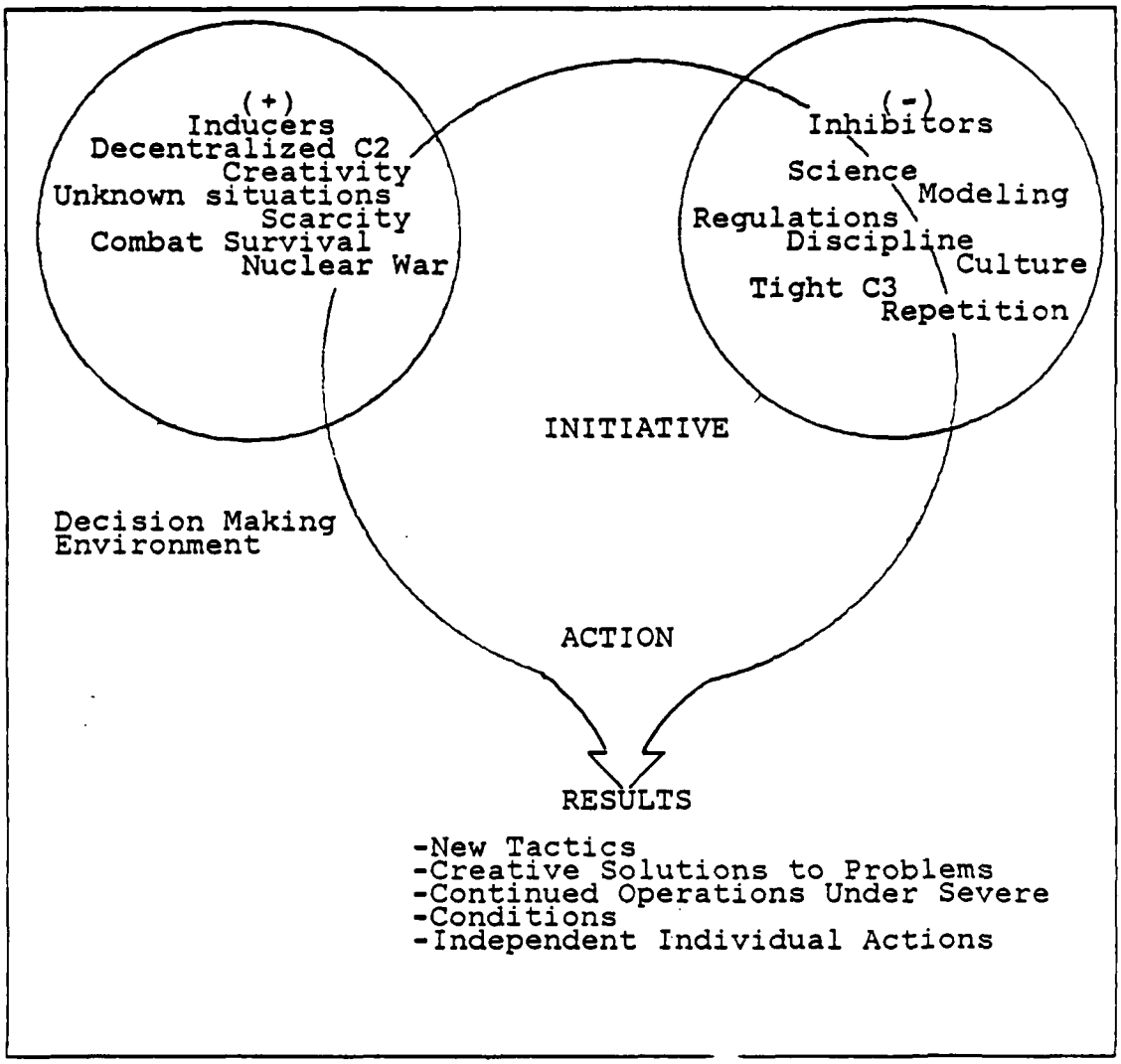

Figure 2.2 Initiative Model.

III. INITIATIVE DEVELOPED IN WWII

World War II was a period of change and development for the Soviet Air Force. During those four years of battle on the Eastern Front the Russians became an awesome fighting force which defeated the German Luftwaffe. The Soviets developed in two major areas impacting upon their command style. They broke out of their stereotyped tactics by developing fighter pilot independence and initiative and, at the same time, they developed the art of detailed planning for large air operations. At the end of the war, the Russians possessed both free flowing, flexible tactics and minutely planned air operations involving hundreds of aircraft. Although initiative and detailed planning seem to be contradictory methods of fighting, combat is not an 'either or' situation and the two concepts can be synthesized to operate together. This chapter traces the development of initiative in Soviet Air Force tactics during WWII. First a general history of the Soviet Air Force prior to WWII is covered to describe the roots of initiative existing in the Soviet Air Force despite its overall rigid fighting style at the outset of WWII. Then the progressive development of initiative in fighter tactics is shown through the years as the Soviet Air Force gained air superiority and defeated the Luftwaffe. Finally, for comparison with th Soviet concepts of planning and initiative, western ai operations and tactical air doctrine during WWII are briefly discussed. This shows differences and similarities between Western and Soviet air doctrine and initiative and is presented to give a balanced view of Soviet initiative in fighter tactics.

A. PRE-WWII DEVELOPMENT

Prior to WWII, the Soviet Air Force had been involved in the Russian Civil War (1918-1922), the Spanish Civil War (1936-1937), the Russo-Japanese conflict (1939), and the Russian-Finnish conflict (1940). Each of these conflicts influenced the nature of the Red Air Force that entered into combat against Nazi Germany in 1941. After coming to power in 1917, V.I. Lenin is said to have shown "great concern for the formation of the Red Air Fleet." [Ref. 46: p. 82] Throughout the Civil War the Air Fleet supported small operations with elementary air defense reconnaissance, and dive bombing operations [Ref. 47: p. 50]. Although the contribution of the air forces to the overall success of the civil war is considered insignificant, some basic tenants of air power were developed, such as, subordinating air units to ground forces, centralizing command and control of large formations and stressing mobility in air operations. The civil war gave new Soviet leaders the opportunity to modify the tactics and air doctrine they inherited from the Imperial Air Force. [Ref. 47: pp. 49, 50, 60-62] Also, during this period, the Central Aerohydrodynamic Institute (TsAGI), Zhukovskiy Air Academy,[7] and the "Friends of the Russian Air Force" Osoaviakhim[8] were established.

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[7]Professor N. YE. Zhukovskiy was called by Lenin the "Father of Russian Aviation." His institute formed the foundation for "creating a scientific basis for modern aviation in training pilots, engineers, and designers," (Stroyev, p. 85)

[8]It is interesting to note that the aero clubs created under Osoaviakhim in 1923 had a million members within two years, 3 million by 1927 and 11 million by 1933. These clubs found that the "standard Russian had good technical aptitude" for flying. (This is significant in that many Western analysts believe that because Russians have less exposure to owning automobiles, driving, and other skills common in the West, which may enhance flying capabilities, they have less an aptitude for flying.) However, the rapid growth in size and potential capability was not paralleled with an improvement in training or increased air force recruitment. Thus, there were many poorly trained aviators when there was potential for many well trained flyers. (See Schwabedissen, The Russian Air Force in the Eyes of German Commanders, Arno Press, 1960, p. 6 and Boyd, A. The Soviet

Russia developed its own air force institutions and drew upon the assistance of the German Luftwaffe. During the 1920's, Russian Air Force officers were given German general staff courses conducted by the Reich's Ministry of Defense in Berlin. In 1924, a German Reichwehr aviation training school was established within Russia at Lipetsk (150 miles south of Moscow). The experienced gained by the Germans in developing tactics and doctrine in the Soviet Union were passed directly to the Russians. Thus, the Red Air Force developed as an auxiliary to the Army and Navy as did the Luftwaffe. And, perhaps more important, the Russians became intimately familiar with the best of "western" tactical thought. [Ref. 48: p. 1] This influence is seen in the tactical reorganization of the Air Force in 1923. The Russian standard flight (Otryad) of six aircraft was replaced by an element (zveno) of three aircraft which was also the German standard at that time [Ref. 35: p. 21].

Through the 1920's and 30's the political bureaucracy and collective leadership began to take its toll on the operational efficiency of the Soviet Air Forces [Ref. 47: p. 78]. However, Soviet training continued to import lessons from "tactical geniuses such as Valery Chkalov" and the training doctrine remained flexible and ready to "adapt necessary changes." [Ref. 47: pp. 88-89.] By 1933 the Red Air Force had grown to an impressive size of 2000 aircraft but still their command structure held back their overall standards [Ref. 48: pp. 6, 7].

In 1936, the Red Air Force augmented the Loyalist forces in Spain. However, the Russians ignored prearranged plans of the Loyalists and fought independently as they saw fit. [Ref. 47: p. 144] In Spain, the Russian ground forces developed completely new doctrines of war fighting theory known as "Battle in Depth" [Ref. 49: p. 92]. Air power developed

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Air Forces since 1918, Stein and Day, N.Y., 1977, p. 16.)

purely as an auxiliary to the ground forces and was not used for strategic bombing missions. Operating off a large network of austere airfields near the front, air commanders learned the importance of surprise, mobility, flexibility, concentration of forces and deception. [Ref. 47: p. 147] In air tactics, both the Germans and the Soviets developed fluid flying; a flight changed from a three ship formation to four-ship formations of two two-ship elements for mass and flexibility. The three ship formation had proven too rigid and constricted tactics. The two ship formation allowed good maneuverability; two-two ships combined gave adequate fire power and mutual protection of elements in the formation. [Ref. 50: p. 151] Germans flying against the Russians noted that although the Red Air Force was not as capable as the Luftwaffe, they did master some of their problems through improvisations such as camouflage. [Ref. 48: p. 45]

These important lessons from their experiences in Spain along with those from technical experiments in the Soviet Union during the 30's with four engine bombers, armored ground attack aircraft, mass paratroop drops and "many other innovative projects" were lost during Stalin's 1937 purge of military leadership [Ref. 50: p. 151]. The survivors of the purge were either innocuous leaders or political appointees concerned more with their survival in the system than improving tactical air doctrine. The sterility and stagnation in leadership caused by the purge was most heavily felt during the conflict with Finland in 1940. Although going against little opposition, the Soviet bomber force had poor results due to their inadequate training. The Russians lost 750-900 aircraft while the Finns lost only 60-70 [Ref. 35: p. 90]. The Germans also observed Soviet performance against Finland and made these assessments:

> in light of events in Russo-Finnish war, training standards seemed low in coordinated action with ground forces . . . the command was considered awkward, old fashioned, and inclined toward stereotype methods . . . . [Ref. 48: p. 12]

The Soviet general staff was not pleased with the results of the Russo-Finnish campaign and began a far reaching reorganization of the Red Army [Ref. 51: p. 77].

Following the Russo-Finnish war, the Soviets reorganized the air force command structure by placing a political commissar in equal status with the military commander.[9] The dual command system reduced initiative and led to dogmatism and conformity. To perform routine operations was a major bureaucratic task as all operations orders required the signatures of the commanding officer, chief of staff, and political commissar. [Ref. 50: p. 81] Any flexibility in leadership which had been developed in Spain was completely lost.

These problems of ridgedness and stereotypical actions made their way down the chain of command into aircrew training at that time. For example, trainees learned formation flying by observing and reacting to hand or wing movement signals given by the squadron leader "with no encouragement to develop personal judgement or initiative." [Ref. 35: p. 95] Soviet manuals placed a special emphasis on formation flight training at the expense of other tactical flying. As a result, instrument (blind) and night flying was not mastered by the majority of Soviet pilots. Pilots were apprehensive about flying new aircraft and in unfamiliar environments and the overall communications systems for controlling pilots were "unsuited for flexible conduct

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[9]This dual command system had been established in 1937. In 1940 the commissar was replaced with a political deputy subordinate to the unit commander. In 1941 the dual command system was revised and in 1942, the single chain of command was once again instituted and has remained ever since. (see Boyd, p. 91).

of air warfare." [Ref. 48: p. 32] [Ref. 35: p. 96] Most significantly, individual aircraft crews could be "employed only conditionally in independent missions since they had lost the faculty for independent thought and action because of excessive training in formation flying." [Ref. 48: pp. 25-26]

In short, the Red Air Force on the eve of a German invasion appeared as easy prey to the Luftwaffe. The German Air Force High Command assumed "that many of the Soviet pilots would be brave but lacking in initiative, and so ineffective in individual combat, because they were trained to develop a sense of dependency on the community and on orders from above." [Ref. 52: p. 51] Any building innovations had been cut off four years prior to the German attack and the spreading political bureaucracy had stifled initiative to the point of crippling the Red Air Force before it was even attacked.

B. WORLD WAR II

Coverage of events during WWII is not intended to be an exhaustive history of the war. Instead, the lack of initiative at the outset of war and subsequent development of initiative by the Soviet Air Force is described. Initiative and flexibility can be seen in the tactics and command style from both the Soviet and German perspective. For this discussion, WWII has been divided into four phases: Barbarossa-Summer 1941; Autumn 1941-Summer 1942; Summer 1942-1943; and, 1944-1945. Phase one is characterized by confusion and retreat. Phase two is primarily defensive actions to save Moscow and the rebuilding of the air force. Phase three begins the Soviets' major offensives; the missed attempt to free Leningrad in the summer offensive 1942 and the successful retaking of Stalingrad and offensive in the Kharkov-Orel sector. Phase four is Operation Begration, the

Belorussian campaign, and the invasion and defeat of Germany. In each phase, Soviet airmen become a more capable, flexible fighting force and at the same time, the air operations become larger, requiring more detailed planning and centralized control. While the primary focus of this thesis is initiative in fighter tactics, the development of bomber tactics during the war is also presented because of their overall impact on soviet air force development in the years following the war.

1. Operation Barbarossa - Summer 1941

On June 22, 1941, the Germans launched their Blitzkrieg against the Soviet Union. In the attack, 66 airfields containing 70 percent of the Red Air Force were struck [Ref. 35: p. 108]. Under the direction of Beria, new airfields were being built and runways lengthened at the time of the attack [Ref. 53: p. 141]. A large number of airfields were being worked on simultaneously which forced a concentration of fighters and fighter bombers on a limited number of airfields without proper disposal or camouflage [Ref. 54: pp. 476-77]. The Red Air Force was caught by surprise in an extremely vulnerable position.[10]

Just two and a half hours prior to the attack, instructions from Moscow ordered the dispersal and concealment of aircraft. Indicative of the restrictive nature of the command system at the time, the order went on to read, "no other measures are to be taken without specific instructions." [Ref. 54: Vol II] [Ref. 35: p. 108] Paralyzed from within, the Red Air Force suffered heavy losses.

The Luftwaffe attacked with approximately 2000 aircraft [Ref. 14: p. 33]. By noon, the Soviets lost 1200 aircraft and in the course of the day, nearly 1500 aircraft

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[10]There has been some speculation that Beria was a German operative and that he purposefully placed the Red Air Force in a compromising position to ensure a German victory. (See Werth, p. 141)

had been destroyed on the ground alone [Ref. 35: p. 110]. At the end of the first week of battle, Goering announced that the Soviets had lost 4990 aircraft while the Luftwaffe had lost only 179 [Ref. 14: p. 41].

This obliteration of the Red Air Force can in some measure be explained by the element of surprise. However, the observations of German commanders and pilots who took part in the battle as well as the comments of Soviet pilots who fought indicates that the inflexible tactics and unimaginative fighting also played a significant role in the Germans' success. Field Marshall Albert Kesselring commented on the slaughter, saying:

> I watched the battle with the Russian heavy bombers coming from the depths of Russia. It seemed almost a crime to allow those floundering aircraft to be attacked in tactically impossible formation. One flight after another came in innocently at regular intervals, easy prey for our fighters. It was sheer "infanticide." [Ref. 55] also [Ref. 56: p. 10]

Col Von Beust remarked, "it is well known Soviet unit's had to follow their unit leader into action, suiting their actions to his, like machines, without any knowledge of their target, route or enemy situations." [Ref. 48: p. 57] Soviet bombers were known for holding to their course regardless of the losses going on around them [Ref. 57: p. 221]. Luftwaffe pilots noted that Soviet air formations became confused and usually turned back once the formation leader was shot down. This was contributed to the fact that only the Soviet unit leaders were furnished maps and briefed the units mission. [Ref. 48: p. 128] and [Ref. 35: p. 95] Such tight controls gave Soviet pilots absolutely no chance to develop or display initiative or innovations at the outset of war. The Soviet command was paralyzed from Stalin on down and this in turn paralyzed the Red Air Force. [Ref. 57: p. 218] The air leadership was often aimless,

rigid in outlook, and lacking in effective coordination [Ref. 52: p. 51]. In the weeks that followed Barbarossa, "the Russian Air Forced appeared to be paralyzed; only small units, appearing at very infrequent intervals, participated in combat actions, and most of these were uncoordinated and unsystematic." [Ref. 14: p. 39]

The rigidness and lack of initiative that was characteristic of the Soviet Air Force during the first several months of fighting can be clearly seen in the fighter, ground attack, and bomber tactics. Fighter tactics were primarily defensive. Soviet pilots were known to abandon the bombers they escorted. The principle formation was the three ship which had earlier been rejected by the experience in Spain. Soviet fighters would only engage the Germany fighters when they outnumbered them. Even when attacking, the standard formation was the defensive circle. In dogfights, the Soviets would panic and dive low to escape. Roughly 90 percent of the fighters shot down were lost over Russian territory indicating their lack of aggressiveness. Pilots were not willing to accompany their own bombers or attack German bombers before they reached Russian territory. In some cases, Russian fighters would pretend to intercept German aircraft, performing mock combat several thousand feet below the German fighters to put on a display for their commanders below. [Ref. 14: p. 184] Flying the same tactics at the same time of day - day after day - the "Soviet airmen were not good at independent air combat." [Ref. 48: p. 66 also, pp. 65-91]

The only element of tactics that remotely resembles initiative during the first phase of the war is that of ramming. From the first day of combat, pilots of obsolescent fighters fighting against the German Bf-109 rammed the enemy aircraft out of desperation. The first pilot who rammed was made into a national hero. That the pilot

thought of the tactic himself and executed it on its own demonstrated that initiative and Russian creativity could surface when severely threatened.

Ground attack aircraft and fighter bombers were "aggressive, courageous, and determined;" yet, they lacked "initiative and versatility." [Ref. 48: p. 108] Aircraft made their attacks using a flat curve approach in a tight in-line formation. No evasive maneuvers were made despite heavy anti-aircraft artillery (AAA). Attacks on highways were repeatedly made at right angles to the road. (This means less exposure to any vehicular traffic on the road and therefore results in much lower kills for a strafing run.) Attack runs on most targets were designed to give the fighter-bombers the shortest egress route back to their side of the front. The attack tactics "lacked variety and flexibility so that attacking units suffered unnecessary heavy losses." [Ref. 48: pp. 111-123]

Bomber pilots showed the least amount of flexibility. As already mentioned, only the lead pilot was given instructions and the elements in the formation followed along as lemmings. Formations were normally tight, 6-8 aircraft. Attacks were straight and level with little or no maneuvering to avoid AAA. The formation would stay with the same spacing regardless of the losses being inflicted. Fighter escort of bombers was attempted unsuccessfully. The largest formations for early air operations was roughly 40 aircraft. [Ref. 48: pp. 114-131]

The initiative and flexibility demonstrated by the tactics for the first period of the war is summarized in Figure 3.1 In phase one Soviet tactics were rudimentary and restrictive. Individual pilots had to follow their commanders blindly and unit commanders had to wait for orders from on high. The Germans encountered these same

		TACTICS	INITIATIVE
1.	Fighter	- Three ship flight - Stereo-typed - Defensive circle - Horizontal maneuvers	- None - Inflexible -(-,-)
2.	Ground Attack	- Unimaginative - Stereo-typed - Flat curve attacks	-(-,-)
3.	Bomber	- Straight and level - Lead only informed - Tight, inflexible - Small operations	-(-,-)
4.	Air Operations	- Small (40 aircraft)	-no effect

A (-) indicates inhibition of initiative, a (+) will indicate tactics conducive to using initiative.

Figure 3.1 Soviet Tactics June 1941-Summer 1941.

tactics throughout the summer of 1941 as the German Army made its way to the steps of Moscow. In the first three months of war the Soviets lost 7500 aircraft [Ref. 58: p. 29]. However, the majority of these aircraft were lost on the ground during the initial Blitzkrieg. The months of fighting had also cost the Luftwaffe dearly. By the end of September, the Luftwaffe had lost 1603 aircraft and had 1028 additional aircraft damaged [Ref. 57: p. 377]. Despite the Luftwaffe's clear tactical and command superiority, the victories had not been easy and had cost many German lives. German fighter pilots recalled some of the harrowing moments of combat: ". . . they would let us get almost into an aiming position, then bring their machines around a full 180 degrees, till both aircraft were firing at each other head on." [Ref. 57: p. 220] The Germans had already gained a year's combat experience from the Battle of Britain (June 1940-June 1941) which cost them 1733 aircraft. In one fourth the time against the Soviets, the Luftwaffe had

sustained similar losses - attesting to the ferocity of the battle on the Eastern front and the staying power of the Russians.

At the beginning of the campaign the "German Air Force swept the Soviet Air Force from the skies and destroyed nearly all its obsolete aircraft." [Ref. 14: p. 252] Following Hitler's detour into the Ukraine and the delay in taking Moscow, the Soviet Air Force was given a chance to rebuild and regroup. The Germans' lack of a four engine bomber left Soviet aircraft production relatively intact. The Soviets were given a second chance to change their doctrine and tactics. Slowly, in late 1941 the changes began to take place and with these changes came "the beginning of the death of the German Air Force." [Ref. 14: p. 253]

2. Autumn 1941 - Summer 1942

The defense of Moscow in the Autumn of 1941 was the beginning of the Soviet Air Force's loosening up and development of initiative. The Germans noted signs of recovery "especially at the focal points of the main ground operations." [Ref. 52: p. 53] The Soviets realized in the beginning of the war tactics were primarily defensive as the Army was on the retreat. Subsequently, appropriate changes began to be made in their air tactics and employment. Part of these changes involved the loosening of restrictions and encouragement of independent actions. The changes took place in both the upper and lower levels of command.

In the upper levels the command structure was decentralized in the Summer of 1941. Combat had shown that combined-arms staffs could not handle the vast number of tasks before them. Therefore, the staffs of the various services were given independent operational responsibilities and separate staffs were established to manage the organization of the rear, supply, etc. [Ref. 59: p. 24]

Also, the Air Force realized "there was considerable trouble too in the tactical control of air units and groups." [Ref. 60: p. 69] Not enough aircraft were under the direct control of the front commander which limited efforts for concentrating air power.

In tactics elements of initiative also became manifest, however, fighter tactics lagged behind ground attack tactics. Pilots still fought horizontal engagements primarily due to lack of power and their lack of combat experience. Marshal of Aviation A.I. Pokryshkin points out that horizontal combat is "ultimately a defensive tactic and a passive one." He goes on to say combat forced Soviet aviators to seek out new tactics. The result was the development of vertical tactics and new combat formations. The new formations consisted of the two plane element since the three ship formation "impeded maneuvering in combat." As Marshal Pokryshkin stated, "This was innovation. I now know that simultaneously with me but on other fronts many pilots were flying in pairs." [Ref. 61: p. 45] The pair of aircraft (zveno-para) allowed for the future development of greater tactical flexibility however, because radio was not yet widely distributed for controlling fighters, "all maneuvers in aerial combat were executed on the basis of variants worked out in advance." [Ref. 62: p. 64] Also, fighters normally made one attack pass because "repeated attacks seldom succeeded in downing the enemy." [Ref. 60: p. 70] Therefore, restrictive elements remained in fighter tactics.

Innovation and initiative developed as men like Pokryshkin began drawing sketches of his dogfight engagements, trying to compute what had happened and develop better tactical solutions. Pilots gathered in his airdrome dugout which was covered with these charts and diagrams and listened to his explanations of German tactics and ways to defeat them. [Ref. 63: p. 90] His initiative to analyze and

teach tactics resulted in the 5th Fighter Regiment becoming a crack unit and 30 of the pilots he trained becoming heroes of the Soviet Union [Ref. 63: p. 81]. More extensive innovations took hold in fighter tactics in 1942; however, in Autumn of 1941, the basis and elements of initiative were beginning to surface.

In ground attack tactics, aircraft began attacking targets independently without fighter cover. Fighter bombers began ingressing at "hedge hopping" level. Bombs were released on a signal from lead or "each crew dropped them independently with individual sighting." However, in all cases, the commander of a subunit was the lead aircraft and he maintained his position throughout the fight. [Ref. 62: p. 64] Further innovations included using smoke or cloth panels to mark the forward edge of their own troops when there were not enough resources to establish a command post in an area. In some instances, mission briefings were given to entire unit's and not to flight lead only as had been the case previously. Also, some attacks took place without "a leader-plane or leading formation." [Ref. 64: p. 65]

In bombers during the Battle for Moscow, the tactics began to show innovations by varying between escorted and unescorted missions and by closely coordinating attacks with ground attack fighter-bombers. Bombers would precede ground attack strikes on an airfield and mark the targets for following ground attack aircraft. By cleverly varying the altitudes, ingress routes, and fighter escort locations, the Soviets were able to confuse airfield air defenses and destroy German aircraft on the ground. [Ref. 64: p. 65]

Overall, the period of late 1941 was marked with a growth in aggressiveness and overall standards. Improvements began to increase in 1942 as the fronts were

engaged in primarily defensive actions until the German offensive near Kharkov. The defense of Moscow invigorated Soviet morale and bought them time; time to continue rebuilding and reorganizing.

In rebuilding the forces over the Winter of 1941-1942, the Russian Army swelled to over 4 and a half million men. In 1942 the Russians produced 25,000 aircraft for just one front while the Germans produced 15,000 for three fronts. [Ref. 65: p. 55] Germany thought the Soviet Union had exhausted its reserves by 1942. As General Reinhard Gehlen put it, "Thanks to their not unexpected talent for improvisation, and to the endemically rigorous qualities of the Soviet State, Moscow had succeeded in mobilizing several million men in new divisions." [Ref. 66: p. 51] The Soviet leadership faced with a great threat to their survival, showed their ability to innovate in this type of environment. With more men and machines Stalin reorganized the command and control to increase strategic flexibility in battle management as previously discussed. A separate command for bombers (Long Range Aviation) ADD, was created directly beneath the Stavka for placement of bomber aircraft within the entire theater. The Stavka also directed the allocation of the new strategic reserve of forces. These forces comprised 43% of the total air assets and were made up of entire units that would be inserted at critical locations. Overall, the new organization increased the strategic flexibility of the Red Air Force by increasing its mobility and concentration capabilities. Now the Stavka had an entire range of options to choose from in meeting the threat and developing offensive air operations. [Ref. 65: pp. 52-53] Through a process of "desperate trial and serious error," Stalin had improvised an operational command system which had centralized strategic direction and decentralized battle management [Ref. 67: p. xi]. Decentralized battle

management is another step towards developing an environment for commanders to use initiative.

Over the Winter of 1941-1942 the "greatest deficiencies in flying ability, operational procedures, organization, and command and staff methods had been eliminated." [Ref. 48: p. 192] To the Germans, the Soviet fighters began to develop into tremendous adversaries. The loss ratio of the Soviets began to decline as a result. Fighters were gradually made into an elite force and the best units of any type aircraft became known as "guards" units to instill pride and boost morale.

In the first half of 1942, the zveno-para or two ship became more the standard fighter formation because of its greater tactical flexibility and tactics in the vertical plane began to be developed. Fighter bombers began flying in flights of 4 (two pairs) and the formation began to shift from a wedge to in line and row formations. Overall, the period of Autumn 1941 to Summer 1942 was a time of growth, learning and adaptation. If at the outset of war the Red Air Force could barely crawl, it was now beginning to take its first steps. Figure 3.2 summarizes the tactics and initiative for this second period of the war.

3. Summer 1942 through 1943

From the Summer of 1942 and throughout 1943, the Soviet Air Forces grew in number and capabilities. In 1942, 25,400 aircraft were built and in 1943, 35,000 more flew into combat [Ref. 68: pp. 20, 22]. Air superiority in 1942 remained with the Germans but through 1943 the Russians seized the initiative in the air [Ref. 48: p. 170]. The Soviet pilots began showing more signs of flexibility and offensive, aggressive combat. Their adaptability was especially noticeable in the intermediate command levels; although according to the Germans, low level commanders

		TACTICS	INITIATIVE
1.	Fighter	- Two ship beginning	- In isolated units
		- Beginning vertical maneuvers	- (+,-)
2.	Ground Attack	- Two ship - Attacks w/ and w/out lead	-Beginning
		- Independent attacks	- (+,-)
3.	Bombers	- Straight and level - Better integration w/other	
		- Operations growing in size	- (-,-)
4.	Air Operations	- Better integration - Fighter cover up bombers	- (+,-)

Figure 3.2 Autumn 1941 - Summer 1942.

still lacked self reliance and flexibility. The Battle of Stalingrad "proved clearly that Russian aviation matched that of the Germans who had lost their earlier superiority," and, after the Battle of Kursk the Russians definitely "led in the air." [Ref. 48: pp. 168, 172]

The Red Air Force had learned one of the basic principles of combat, concentration of forces. Stalin's Strategic Reserve Forces and Air Armies were used to mount overwhelming superiority in numbers opposite the main battle area while other parts of the front were sparsely covered. Instead of being fixed in one location, the reserve could be moved flexibly across the front. "This did not guarantee permanent air supremacy but it would help to give local and temporary supremacy for a particular battle." [Ref. 65: p. 53] The concentration of forces became the doctrine of the air offensive.

According to the defeated Germans, the Russians adopted German tactics and flexible command style.

> Russians can credit their great victories to the fact that they applied standard German command principles: Zhukov as military commander enjoys complete freedom within the framework of the task assigned to him . . . in the meantime, we (Germans) have borrowed from the Russians their earlier system of rigidly laying down the law on virtually everything and going into the finest details, and therein lies the blame for our defeats. [Ref. 66: p. 60]

The increasing efficiency of the Red Air Force along with its growing size, improving tactics, and offensive nature seriously hampered the effectiveness of the Luftwaffe. At the bottom of all of this was the growing initiative of the pilots. "Through the initiative of the commander and flying personnel the shortcomings revealed in combat were eliminated." [Ref. 62: p. 65] All combat formations echeloned in altitude for better observation and freedom of action. Formations became more open and fluid for maneuverability and mutual support. For both fighters and ground attack, the two ship element became the standard.

In fighter tactics, the two ship loosened up to give wide frontal spacing and aircraft would alternate between attack and cover positions. "Free Hunt" patrols of aircraft operating in groups of 3-4 pairs or even single ship lone wolf patrols became common. The free hunting aircraft operated independently and necessitated initiative. Pilots were given their own sectors to search both over Soviet territory and deep into enemy territory. They sought out enemy fighters and engaged them independently.

Air defense patrols over the battle area were hampered by lack of radar and fighter director posts; but, in the Battle of Stalingrad radio became the basic means of control for fighter aircraft [Ref. 62: p. 67]. Senior commanders would give airborne fighters information on the

aerial situation and vectors for interception. This became especially prevalent at the battle in the Kuban and resulted in the development of a stacked formation of fighters. Elements were echeloned 600-800 meters above offset toward the sun to increase the element of surprise when attacking.

Another new tactic for fighter cover was the development of a "free maneuvering group" of fighters. A fighter cover group escorting bombers or ground attack aircraft would fly above and behind the attack aircraft. Even higher was positioned the "free maneuvering group" consisting of a pair or flight of aircraft. These reserve aircraft were committed by the commander's decision or they could operate on its own discretion. [Ref. 69: p. 12] Fighters operating on their own in either "free hunt" or as a "free maneuvering group" had to be able to make independent decisions and act on their own initiative. As more pilots were exposed to this type of fighting, independent decision making and initiative became more a part of the population of Soviet fighter pilots.

The development of independent initiative began manifesting itself in the actions of wingmen. Wingmen were no longer robots awaiting the orders from the formation lead. Instead they gave mutual support and took the initiative in engagements. For example, Lt Gen of the Air Force (ret) N.S. Romazonav in his war memoirs describes an instance during which one fighter breaks away from a group and engaged a group of nine enemy aircraft [Ref. 70: p. 85]. In another instance, a wingman independently chose to attack a group of German bombers head-on as his lead went low to make a reattack on the rear [Ref. 71: p. 93]. Such initiative was apparently becoming prevalent to the point of breaking down flight discipline and group integrity. Training of new pilots in fighter units then dealt with this problem by balancing independence with obedience.

Training in 1943 devoted much attention to tactics of group actions and instilling in wingmen their duty to cover their lead unless released to engage separately. "Remember once and for all, if the flight lead gives the order 'follow me,' go! And don't think about busying yourselves with some discovery or other of your own." [Ref. 71: p. 98]

By the Soviets' own admission the loners that separated from their leaders "mainly became the victim of the German fighters." [Ref. 72: p. 62] They continued to emphasize the need for mutual support. At the same time, it was important that pilots develop their tactical mind and think independently. [Ref. 61: p. 48] Regiments gathered together to discuss individuals' 'secrets' of success. The exchange of ideas encouraged independent thinking and actions. These gatherings differed from the 'scientific society' meetings because combat solutions from individual initiative were being exchanged for adaptation, modification, and application as a given pilot or commander saw fit; rather than a common 'scientific' solution being dictated to a group of pilots.

In addition, a great deal of attention was given to training leadership in air regiments and squadrons. Three day courses were held for commanders to discuss tactics and operations problems creatively. [Ref. 72: p. 103] The result was the defeat of Luftwaffe pilots "cleverly and with tactical competence." [Ref. 70: p. 90]

A German pilot shot down during the battle of Kursk said of Soviet pilots: "The main thing is that you have no set pattern in tactical methods. Each time one is confronted with a new surprise." [Ref. 70: p. 91] The Luftwaffe believed Russian fighters were becoming increasingly aggressive--seeking out fights--and "this meant

considerable damage from 1941." [Ref. 48: p. 197] Guards fighters were considered experts in individual fighting. The attack and cover elements alternated the attack in the dogfight. Dogfights became more and more common and the Russians developed a "sure flair for German weaknesses." Offensively minded and tactically skilled, the Soviet fighters were no longer inferior to the Luftwaffe's challenge. [Ref. 48: pp. 197-200]

Finally, to increase striking power of an attack force, fighters were being fitted with bombs to attack ground targets. The pilot made the decision whether or not to jettison the bomb for a dogfight and which target to attack with the ordnance. [Ref. 71: p. 70]

As the fighters developed initiative, elements of centralized control increased, also. The small details of placement of fighter patrols, etc. normally established by Division and Regiment commanders were dictated from high up the chain of command in some cases. During the Battle of Stalingrad, "the organization of fighter ambushes was directed personally by the commander of the 16th Air Army, Gen S. I. Redenko." [Ref. 72: p. 24] However, his planning probably did not prescribe tactics, only location of fighters and their primary objectives.

In ground attack operations, the size of the attack group began to grow from small groups to entire squadrons and regiments operating against a given objective. In 1943, air divisions and entire corps were operating in massed air strikes. However, the size of the operations did not stop the innovation of new tactics. The "circle of death" was developed and used extensively during the Battle of Kursk. This tactic involved two flights of ground attack planes alternating attacks on tanks while maintaining continuous fire on the targets and mutual support between crews. [Ref. 69: pp. 16-17.]

New formations included echeloned line astern which permitted greater flexibility. Fighters ingressed at low level ("hedgehopping") for the first attack run then transited into the circle formation. In many cases the ingress of attackers was so low the fighter-bombers would perform a "zoom" climb to 600-800 meters to gain altitude for their daring attacks. [Ref. 62: p. 70] Ground attack forces became much more aggressive than at the outset of the war. An example of their aggressiveness is their free hunt missions.

"Freehunt" in ground attack sorties involved pairs of fighter bombers searching for targets of opportunity using the landscape for surprise and escape [Ref. 35: p. 149]. Clearly during these missions pilots used their own initiative to make tactical decisions on ingress routes, where to attack, how to attack, and egress routes. In May of 1943, Stalin created an entire air army of attack regiments specializing in free hunt. They were given no specific target instructions, but went searching for enemy communication sites, railroad traffic, etc. [Ref. 58: p. 56]

Tactical variety for ground attack operations became common. Aircraft attacking the same target would come in from different directions, at different altitudes and using different formations. "In carrying out their missions the Soviet ground attack pilots demonstrated flexibility in their choice of tactics." [Ref. 48: p. 220] In addition, other examples of initiative and creativity used in 1942-43 include: improvisations such as setting fire to the grass with incendiary bombs in the Don area to force the German troops to retreat; using phosphorous incendiary bullets in the Kuban bridgehead to hamper troop movements; and building an artificial smoke screen 300 feet high to conceal the approach of ground attack aircraft [Ref. 48: p. 223].

The following episode attests to the "daring, initiative and tactical skill of the ground attack pilots." A group of fighter bombers arrived at an area where they had been told by reconnaissance a group of tanks was located. The pilots found a meadow dotted with haycocks. The lead aircraft ordered the haycocks be strafed though no tanks could be seen. Within the hay were tanks. Separating into pairs, the pilots bombed and strafed the tanks. As they finished destroying the tanks, they were attacked by a group of Messerschmitts. The ground attack pilots turned and engaged the fighters and then returned home. [Ref. 73: p. 41] Earlier in the war when pilots did not see their target as they were told they would, they would return to base, and if attacked by fighters, they turned and fled. Now, they showed initiative in deciding to attack the hay stacks and the discipline to stay and fight the German fighters.

In contrast to the developing initiative, when ground attack operations did not succeed, poor results were blamed on loss of surprise and in some cases because "the interaction between the assault planes and their covering fighters had not been sufficiently worked out in practice." [Ref. 72: p. 58] Bad results, then, were attributed to not enough detailed planning and practice by some air force leaders.

The bomber tactics made only moderate changes during this period, lagging behind the other air force units. A revolving attack designed by Col I.S. Polbin had bombers alternately attack a target as the other bombers circled around for a reattack. The tactic, similar to the ground attack "circle," kept the heads of any air defenses down as bombers continuously dropped their ordnance. Fighter escort also had to adjust their tactics to provide cover. Pairs would split between protecting the attacking bombers and the

recovering bombers. [Ref. 62: p. 69] [Ref. 35: p. 151] As bomber pilots no longer relied on a lead aircraft to tell them when to release ordnance, rather than being mechanical robots, the pilots had to think on their own and make their own attack runs.

The most significant development of initiative was the use of bombers in a type of free hunt. "Bombers were often sent out in total ignorance of the situation on the ground and attacked any likely target of opportunity at the decision of the squadron or zveno commander." [Ref. 35: p. 50]

The size of bomber operations were regimental strengths: three squadrons of 10 following each other at short intervals. However, the regiments were combined into massive operations involving 400-500 bombers such as the air operation against Kharkov, called the largest air battle of the war. [Ref. 57: p. 295]

Air operations developed fully during this period. In 1942 when the Germans attacked across the Don, large Soviet air operations reverted back to rigid tactics. A formation of 160 aircraft was massacred by air defenses as they held their pre-determined positions. [Ref. 35: p. 157] At Stalingrad over 1300 aircraft were coordinated and at Kursk over 4200 aircraft were used in air operations. The Stavka made all the final decisions and "displayed impressive skills at organizing large scale air operations." [Ref. 58: p. 32] Single formations of over 500 aircraft at times were massed in the air and flown against their objectives. The magnitude of such operations required extensive preplanning for altitudes, checkpoints, target allocations, times over targets, egress routes and altitudes recovery location and times. Entire air armies coordinated their efforts. For example, at Kursk the 16th, 4th, and 5th Air Armies and the 6th Long Range Bomber Corps coordinated their actions. [Ref. 67: p. 71]

Air operations were normally three to four days long and each day had three to four massed raids each involving 350-400 aircraft. Their purpose was to make concentrated strikes against enemy position to improve the effectiveness of air power [Ref. 72: p. 68]. Detailed instructions for procedures during the operation were issued to the Air Army commander by the commander of the Red Army Air Forces [Ref. 74: p. 38]. For an example of the planning, see Appendix B. It is interesting to note that the Soviets realized there was a time for planning and a time for spontaneous operations. During the Battle of Kursk, an order from the Deputy Commander of the Red Air Forces, Col Gen of Aviation Vorozheykin, read:

> As a consequence of the loss of surprise of attack . . . the results of our massed raids (air operations) . . . have declined sharply . . . my orders are: to make breaks of 3 or 4 days in the massed raids (air operations) . . . going over during these days to broad operations against motor and rail shipments using "hunter" forces. [Ref. 74: p. 39]

As discussed earlier, free hunt missions were spontaneous attacks at the discretion of the pilots. So, despite the growth in the air operation and correlating growth in preplanning, Air Force commanders still saw the need for surprise and initiative and freedom of operations required to achieve that surprise.

In summary, "by 1943 the entire balance of air power in the Soviet-German conflict had shifted in favor of the Soviet Union." [Ref. 75: p. 62] The Germans felt the Russians had learned a lot from their defeats in 1941 and were becoming an increasingly more difficult adversary because of their sophisticated tactics and deception [Ref. 66: p. 63]. "The Soviet airman thus developed into an opponent who could no longer be disclaimed . . . this was quite apart from the steadily increasing number of

aircraft." [Ref. 48: p. 62] The developments in initiative and tactics from the Summer 1942 through 1943 are summarized in Figure 3.3 .

	TACTICS	INITIATIVE
1. Fighters	- Wider formations(+) - Free hunt - lone wolf(+) - Free maneuvering group(+) - Independent wingmen(+) - Fluid tactics horizontal/vertical(+) - Offensively minded(+) - Radio controlled - Flight discipline (+,-) - Air operations(-)	- Independence in low level decisions -(+,+)
2. Ground Attack	- "Circle of death"(+) - Free hunt(+) - Multiple attack profiles(+) - Clever tactics(+) - Larger attacks(-) - Involved in air operations(-)	- (+,+)
3. Bombers	- Circle attack(+) - Free hunt(+) - Air operations(-)	- (+,-)
4. Air Operations	- 500 aircraft formations(-) - Centralized detailed planning(-) - Grew to involve over 4200 aircraft - Stavka knew when to revert back to free hunt(+)	- (-,-)

Figure 3.3 Tactics and Initiative Summer 1942-1943.

4. 1944 Through 1945

In the final period of the war, 1944-1945, the Red Air Force experienced a continued growth in initiative in fighter forces to probably its high point of this century. During this phase initiative reached a plateau and even

declined as an average across the entire Air Force. This was due to the massive air operations which took place and due to the large increase in the number of new pilots coming into the combat units. Pilot training shortened to rapidly fill air armies. This swift training could not keep the standards of realistic training set in 1943. According to the retreating Germans some of the new soviet pilots displayed reluctance in engaging them.[11] The growth in the air operations led to an increase in preplanning and detailed organization. Therefore in the Soviet air command the potential existed for conflict between pilots and commanders who believed in and emphasized initiative and flexibility and those who thought minute preplanning was critical to successful operations. On the whole, by Spring of 1944 during which the Soviets began their offensive in the center of the Eastern front, "Soviet air squadrons were showing the same resilience and flexibility in support of combined land-sea forces as Anglo-American air arms were to show in Western Europe a few months later. [Ref. 75: p. 70]

The prowess of Soviet air power was demonstrated fully in the Crimean Battle. In 1941-1942 the Germans had overwhelming superiority in aircraft and men in the attack on Sebastopol; yet they could not take the city for 250 days. In April of 1944 the Soviets captured Sebastopol in four days - air power playing a significant role in assisting the offensive. [Ref. 53: p. 832] [Ref. 48: p. 272]

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[11]To the end of the war the Germans believed their pilots were better skilled intellectually, emotionally, and spiritually. However, at the same time so too did the Soviets believe their pilots were superior in all ways to the "fascists" claiming in the final battles to have shot down 6-7 fold more German aircraft in air battles than they lost. (See Schwabedissen, p. 267, Wagner, p. 388, and Prussakov, p. 264)

By 1944 Soviet fighter pilots were highly qualified and a serious opponent. This development had been expected and feared by German commanders. Soviet pilots were being trained to act independently and aggressively in an ever increasing manner as though they were "masters of the heavens." Their tactics were increasingly "clever;" exploiting weather conditions and attacking from multiple directions at varying altitudes. Pairs were linked loosely and some fighters roved alone. Free hunt became the preferred mission and the fighters became increasingly deadly. "Dive bombers which became separated from their formation were invariably shot down by Soviet fighters." [Ref. 48: pp. 301-314]

One of the most famous Soviet fighter pilots of the war sums up well the creative initiative that existed in the fighter mentality during this period because of leadership and training from men like himself. Thrice hero of the Soviet Union, Marshal of Aviation A. I. Pokryshkin had this to say:

> Each air combat has its own unique features. In a war, what was good yesterday is not always suitable today. In air combat it is dangerous to always use the same routine procedures. The value of creativity for a fighter pilot is that at the essential moment he is able to use not one of the 100 previously learned procedures which would be good in a certain situation, but rather a new 101st, which arises unexpectedly for the enemy in an acute moment of the engagement. The style for conducting combat by each Soviet pilot without fail must be marked by creativity. [Ref. 61: p. 48]

Ground attack pilots distinguished themselves in obliterating enemy tanks, trucks, and aircraft by using innovative tactics. In attacking airfields, attacking aircraft circled at 5000 feet outside the AAA range and dove sequentially in pairs, single ship, or as entire flights for the attack. Following weapons delivery, the aircraft would climb back up to the circle outside the AAA range for a

reattack. The Soviet pilots frequently used deception in their tactics by feigning an attack to draw up German fighters and when the fighters left the major Soviet assault would arrive. [Ref. 48: pp. 326, 338] Another clever tactic was the use of obsolete biplanes to harass troops at night. These aircraft had no application for day fighting, but under the cover of darkness were effectively used to lower German morale. The Soviets showed flexibility in using former transport planes effectively rather than have them sit idle. (The Germans adopted this same tactic in 1944.) [Ref. 75: p. 69]

In ground attack aviation permanent elements and groups were formed in squadrons and regiments; however individual pilots navigated to the target on their own, rather than relying on a lead aircraft to guide them [Ref. 72: p. 171]. The airmen improved in using terrain to cover their approach to the target and in achieving surprise. Units were assigned targets before takeoff, or they were given a target enroute by radio from the area command post. [Ref. 48: pp. 328, 339] These missions required flexibility from each individual pilot, shifting targets in mid-air, planning an ingress route while flying in order to use terrain for cover, and deciding on delivery tactics when the target was sighted.[12] In addition, "rational initiative" was encouraged. A commander of an attack group could redirect his group to a new non-stationary target sighted enroute which he judged more important than his assigned target, immediately informing his commander. An attack on a stationary target could not change unless the target was not occupied or because of bad weather. (It is possible making

[12] In many cases flights or groups of aircraft operating under the control of a forward observation post would be given guidance to the target, told which target to attack, and when to return to their airbase. In the future, this control would be over emphasized to the point of reducing greatly pilots' initiative. (See Prussakov, pp. 47, 118)

a decision in flight was dangerous if the mission was unsuccessful because of potential disciplinary actions.) [Ref. 76: p. 186]

Bombers continued to make regimental attacks and improved their flying techniques. They, too, employed deceptive decoy tactics. In one case a high flying reconnaissance aircraft followed by a small bomber group would fly into a target area to draw a reaction from German fighters. A heavy bomber force approaching from a different direction would wait until the most favorable moment to attack; for example, when the Germans were recovering at their airfield. [Ref. 48: pp. 359-360] Bombers lagged behind the fighters and ground attack pilots in initiative because the vast majority of their missions were part of the massive air operations.

Air operations in 1944 grew to involve 5683 fighters and fighter bombers and 1000 ADD bombers during the Belorussian offensive. In 1945 air operations against Berlin involved 7500 aircraft. [Ref. 77: pp. 270, 346] [Ref. 58: p. 64] During the Belorussian campaign the extreme preplanning for the entire front was supervised by Marshals Zhukov and Vasilevskiy. Front commanders completed their own detailed planning and supervised it to the last detail. Aviation Marshals Novikov and Golovanov supervised the ground attack and bomber planning and execution. [Ref. 67: pp. 212, 213]

Organizing thousands of aircraft in the air required precise navigational control. Ground control methods included radio beacons, lights, radio stations, homing stations, orientation markers, letters, and numbers. Approaches to targets were controlled by colored markers, smoke pots, and flares. [Ref. 77: p. 272] The control methods aided the planning by giving precise locations over which aircraft were required to be at a given time and altitude.

All the aspects of the air operations (take off time, altitude, speed, time on target, return altitude and location, etc.) were planned for 153,000 sorties during the Belorussian air operations and 92,000 sorties in Berlin air operations. [Ref. 77: pp. 283, 361] Also included in the planning was the integration of fighter cover with bombers and ground attack aircraft; deciding which requirements or divisions would support one another. Needless to say, in order for so many details to be successful discipline and obedience to orders and timing was required quite the contrary to independent creative flying. For precise control of aircraft during operations, commanders of air units were placed in army command posts and used radio commands to make any corrections for coordinating with the ground forces. [Ref. 72: p. 226]

The results of WWII show the Soviets were successful in using air operations as a means to concentrate the fire power of their air force. The success reinforced the value of detailed planning in the minds of the commanders who experienced this combat. Creative planning and decisions for battles was removed from the pilots and lower level commands in air operations plans. This period plays a significant role in the struggle between initiative and planning in influencing Soviet Air Force doctrine in the future.

This period, then, is characterized by innovation and continued independence in fighters and ground attack aircraft; some creativity in bomber tactics, although this, too, was preplanned before takeoff countering any inflight initiative; and a great increase in the amount of planning required by air operations. Initiative and tactics for 1944-1945 is summarized in Figure 3.4 .

		TACTICS	INITIATIVE
1.	Fighters	- Flexible - Loose pairs - Lone aircraft - Free hunt favorite - Multiple directions/altitudes	- (+,+)
2.	Ground Attack	- Clever deception - Individual navigation - Re-select targets	- (+,+)
3.	Bombers	- Some decoy tactics	- (+,-)
4.	Air Operations	- Detailed centralized planning - Involved 250,000 sorties - Creativity in planning? (+)	- (-,-,-)

Figure 3.4 Initiative and Tactics 1944-1945.

5. WWII: Initiative Developed

During the four years of fighting, the Soviet Air Force changed from being over centralized and constricted with stereotyped, inflexible tactics to a force having fighters full of initiative and at the same higher level commanders sold on detailed planning. The fighters and ground attack pilots grew to prefer "lone wolf" free hunt missions, exemplifying their independence and individual initiative. The tactics became increasingly fluid and dynamic, changing and adapting as the battle or dogfight required. And, pilots and low level commanders sought creative solutions to their tactical requirements. At the same time, air operations grew from formations of 40 aircraft to ones involving over 500 planes. Integration of fighter, ground attack and bomber regiments, divisions, and entire air armies required extensive planning under centralized control. Two approaches (schools of thought) to

fighting the air war developed - that of initiative and independence in fighters and that of preplanning air operations. The differences in attitudes, methodologies, and doctrines between these two schools of thought may, to a degree, be analogous to comparing USAF's Tactical Air Command's fighter pilot mentality and Strategic Air Command's planning mentality typified by the detailed Single Integrated Operations Plan (SIOP). However the analogy falls short because of the differences between the US and Soviet systems. Soviet planners of the air operation had control over the fighter assests as well as bombers. Because of this, there is a good chance the two schools of thought had disagreements on how to fight the war, particularly in the area of command and control. Planners, of course, favored tight lines of command and control while fighters operating on their own initiative favored looser command and control.

The parallel development of the use of initiative and preplanning for detailed air operations moved along a course shifting from tight command and control towards a looser command and control and moving back towards the original tight command and control although not in the same position as in the beginning. Along the way, lower level commanders (from regimental commanders to flight lead) developed independence in their decision making in the planning of tactics and formations and in the execution on the battle field and in dogfights. The tightening in command and control occured as the air operations grew in size and complexity. However, this did not stop continued growth in initiative and creativity among fighters. The two developed simultaneously. This movement towards more initiative and preplanning is illustrated in Figure 3.5 .

It is difficult to assess whether or not the detailed planning had brought the Soviet Air Force back to

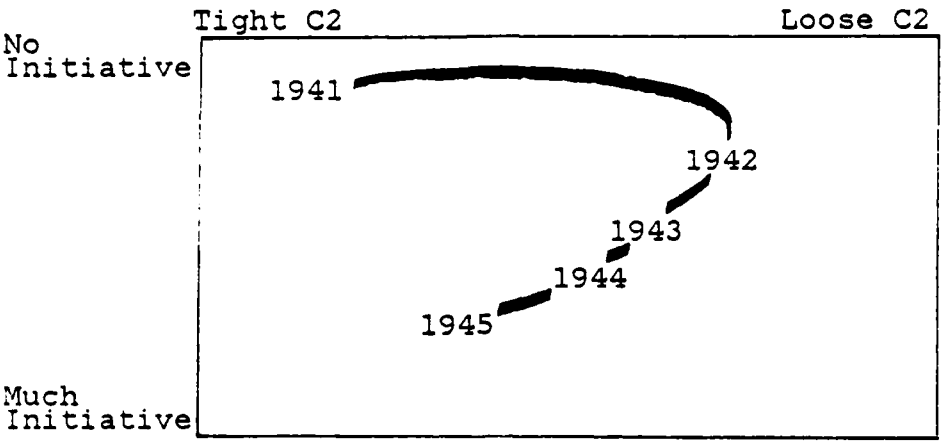

Figure 3.5 Development of Initiative with Preplanning.

the overly centralized command and control that existed in June 1941. There are drawbacks and vulnerabilities in over-centralized command and control as was clearly demonstrated in the destruction of the Soviet Air Force. At the same time, there are advantages to tight C2 as demonstrated by the success of the air operations. However, all too often, western analysts emphasize the vulnerabilities of rigid C2 at the expense of omitting the developed initiative. Assessments of Soviet airmen, then, tend to highlight their need for centralized control and suggest that Soviet pilots therefore lack individual characteristics such as initiative which is highly valued in the west. This is not the case at all. Looking beyond C2 and at the tactics shows initiative was very much a part of Soviet fighter operations. The Soviet pilot may have been culturally different and fought on different fronts under different commanders, yet the initiative developed was very similar to the initiative that developed in western fighting during the war. To illustrate this point and further balance the perspective on Soviet initiative, western planning and initiative during WWII is briefly discussed.

C. BALANCE: WESTERN AIR DOCTRINE

It is important to remember when criticizing Soviet over centralization that during WWII all air forces used a centralized committee system for running the air war and even democracies tended to have dictatorial policies which impacted greatly on strategy and tactics. For example, it was Winston Churchill who insisted on a strategic bombing campaign despite resistance he received from military advisors. [Ref. 65: pp. 127, 129]

US air doctrine in 1944 stated "the inherent flexibility of air power is its greatest asset." The flexibility discussed is the ability to concentrate air power. To do this required centralized control in a superior commander over the ground and air forces. [Ref. 78: p. 2] Control of available air power in the theater must be centralized and command must be exercised through the air force commander. [Ref. 78: p. 7]

Western fighter tactics varied in their development. In the US, air doctrine was concentrating on strategic bombing and individual fighter pilots of the 1930's developed air tactics "on their own initiative." [Ref. 79: p. 81] Original tactics like the Russians' were built around a three ship fighting unit. [Ref. 80: p. 21].

What became characteristic of the US fighter pilot is that during the heat of battle he would improvise and make things work; "we are such incredible innovators that we overcame our errors almost without recognizing them." [Ref. 79: pp. 36, 88] Also, the initiative of the wingman was considered critical by US pilots in WWII. A US Mustang pilot, John C. Meyers, testifying to the US War Department stated:

> Mainly its my wingman's eyes I want. One man cannot see enough. When attacked I want first for him to warn me then for him to think. Every situation is different and the wingman must have initiative and ability to size up the situation properly and act accordingly. There is no rule of thumb for a wingman. [Ref. 81: p. 109]

On the other hand, the British fighter at the beginning of hostilities had a "rigid, attack-by-the-numbers scheme" which some commanders were reluctant to abandon. Pilots were taught to make a highly stylized approach; so controlled, it was "totally unusable in an air battle of any kind." [Ref. 82: p. 27] The Royal Air Force broke away from their rigid beginnings and adopted individualized tactics combined with fighter direction from radar control.

Furthermore, the Germans for all their tactical innovations were also victims of over controlling. Their tactics became restrictive in that all pilots had to fly standard rear, front or quartering attacks depending upon the directive of the Inspector General for Air Defense at the Reich, Adolf Galland [Ref. 80: p. 130]. The Soviets also mentioned the rigidness of German flyers saying "the enemy stuck to the same pattern in his tactics." [Ref. 83: p. 71]

Western bomber tactics also show similarity to Russian bombers. The US 8th and 12th Air Forces Wing Tactical doctrine was characterized by "flexible rigidity." Tactics were adopted and no deviation from them was tolerated in order to provide maximum mutual defense and unit cohesion. Tactics were modified with experience. [Ref. 80: p. 115] Bomber operations were slow in developing, it took the British "more than two years to discover how to drop these bombs on a target area as large as a big city. It took even longer to find out how to hit a precise target." [Ref. 84: p. 126]

The point of briefly covering western doctrine and fighter and bomber developments is to show some similarities

and differences between Soviet and Western initiative in air combat. Fighter operations bred independence and initiative in the West and Soviet Union. Bomber operations by their nature had to be more coordinated and preplanned to be successful. Therefore, both East and West developed initiative and preplanning during the war. It is important to realize this when criticizing the Soviets' highly centralized command and control so as not to forget the West did likewise. This is not to suggest that the systems in the East are identical to Western planning and flying. Each developed in its own context of cultures, individuals, and battles. Soviet fighter pilot initiative of WWII was not necessarily a better or worse quality but of a different kind.

D. WWII CONCLUSION

The primary point is that Soviet fighters did develop and exercise initiative during WWII. Initiative made them better fighters than at the beginning of the war. They became a formidable adversary as individuals. Has this initiative of WWII stayed with the Soviet fighters? To trace the movement of initiative from the war, the next section follows the battle for control and power between the "planning school" and the "initiative school" from the late 1950's to the present.

IV. INITIATIVE AND POST WAR YEARS

A. SURVEY

During WWII, the Soviet Air Force developed initiative and encouraged independent actions especially among its fighter pilots performing "free hunt" missions. Following the war, proponents of initiative probably contended for influence and power against proponents of preplanning and extreme centralized control. In the previous chapter bomber tactics were presented to show their lack of initiative and the development of the "preplanning " school of thought. The focus of this thesis now narrows to primarily initiative in fighter tactics. To determine the fate of initiative in the Soviet Air Force during the post war years to the present, the official journal of the Soviet Air Force was studied for changes in tactics and doctrine. A content analysis was done to measure the relative emphasis given to initiative through the years.

Translations of the official journal of the Soviet Air Force were available from 1957 to the present. From 1957 to 1961 the journal was titled: Herald of the Air Fleet. From 1962 to present, the magazine has been titled Aviation and Cosmonautics. Each monthly issue for every year from 1957-1984 was surveyed.[13] Tactics and training articles and editorials were reviewed for doctrinal changes, new tactics, and emphasis on individual initiative and creativity for pilots and commanders.

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[13]There were no issues available for 1969 and 1970. The translations for the 1950's through 1968 were performed by Air Technical Intelligence Translation, Air Technical Intelligence Center, Wright Patterson AFB, Ohio. Issues from 1971 on were translations by the Foreign Broadcast Information Service. In the early 1970's only selected issues were translated and therefore some issues are missing in the data sample. The data gaps were compensated for through weighted averaging to give the closest probable results similar to those years with all 12 issues.

To measure the amount of emphasis on initiative quantitatively, the number of occurences of words relating to individual initiative, such as initiative, creative, innovation, were counted for each article. Words were counted only if they contextually related to the concept of individual initiative of pilots or unit commanders. Thus, words or phrases such as "collective initiative of the party" did not count. The tabulation of the number of occurances or "hits" per issue measured the intensity of emphasis towards initiative. The total intensity plotted for each year shows the rising and declining trends of initiative over time. Tables of the data collected are in Appendix III.

To balance the straight quantitative measure of initiative, the themes and developments in tactics concerning initiative are presented for each year. This validated the statistical presentation in that the contextual emphasis for or against initiative matched the quantifiable indicator. Although the exact number representing a given year is not meaningful in and of itself, combined with the overall context of tactical developments in the Soviet Air Force, they do represent the relative emphasis on initiative from 1957 to 1984 and can be used in predicting the current state of affairs in Soviet fighter tactics.

B. RESULTS

First, an overview of the major trends through the late 1950's to the 1980's is presented. This is followed by a more detailed description using quotations from the years studied.

1. Overview

On the average, initiative declined in emphasis from the late 1950's until the early 1970's. The decline in emphasis may have a direct relationship to a decline in influence of initiative in Soviet air doctrine. Through the 1970's the emphasis on initiative has risen to approximately

2/3 the relative value of the high point in the 1950's. Figure 4.1 shows the annual results from 1957-1984 plotted using a linear fit. The five year averaging line shows the decline lasting from 1965 to 1975 and the following rise. However, the yearly plots indicate a drop in 1964 that was not regained until 1981. Also significant is that the rise from 1971-1973 and the rise from 1978-1982 were both followed by sharp drops. As will be shown in detail, the rise and falls in emphasis on initiative on the graph coincide with changes in the Soviet Air Force.

In general, the changes in emphasis relate to changes in doctrine stemming from the developments in technology, particularly nuclear weapons. These doctrinal developments have been divided into stages by Soviet writers. Lt Gen Kozhedub said in 1968 that the tactical stages were:

1) World War II to 1953
2) 1954 to 1959
3) 1960 to present (1968) [Ref. 85: pp. 2-7]

During the post war, Stalin era, a future war was seen as being essentially the same as WWII [Ref. 86: p. 27.]. 1954-1959 was a transitional phase during which nuclear weapons were developed as well as improvements in jet technology. As nuclear weapons became more prolific, conventional doctrine and tactics from World War II began to be challenged by faster speeds and increased destructive power of the nuclear weapons. In 1954 the B-52 strategic bomber entered service in the US Air Force [Ref. 87: p.240]. Shortly, thereafter, in 1955 the MiG-19 Farmer entered service. The farmer was nearly 200 mph faster than the MiG 17 and had nearly double the MiG 17's rate of climb. [Ref. 88: p. 220-223] Also, the MiG-21 Fishbed which was designed specifically to counter the B-52 threat took its

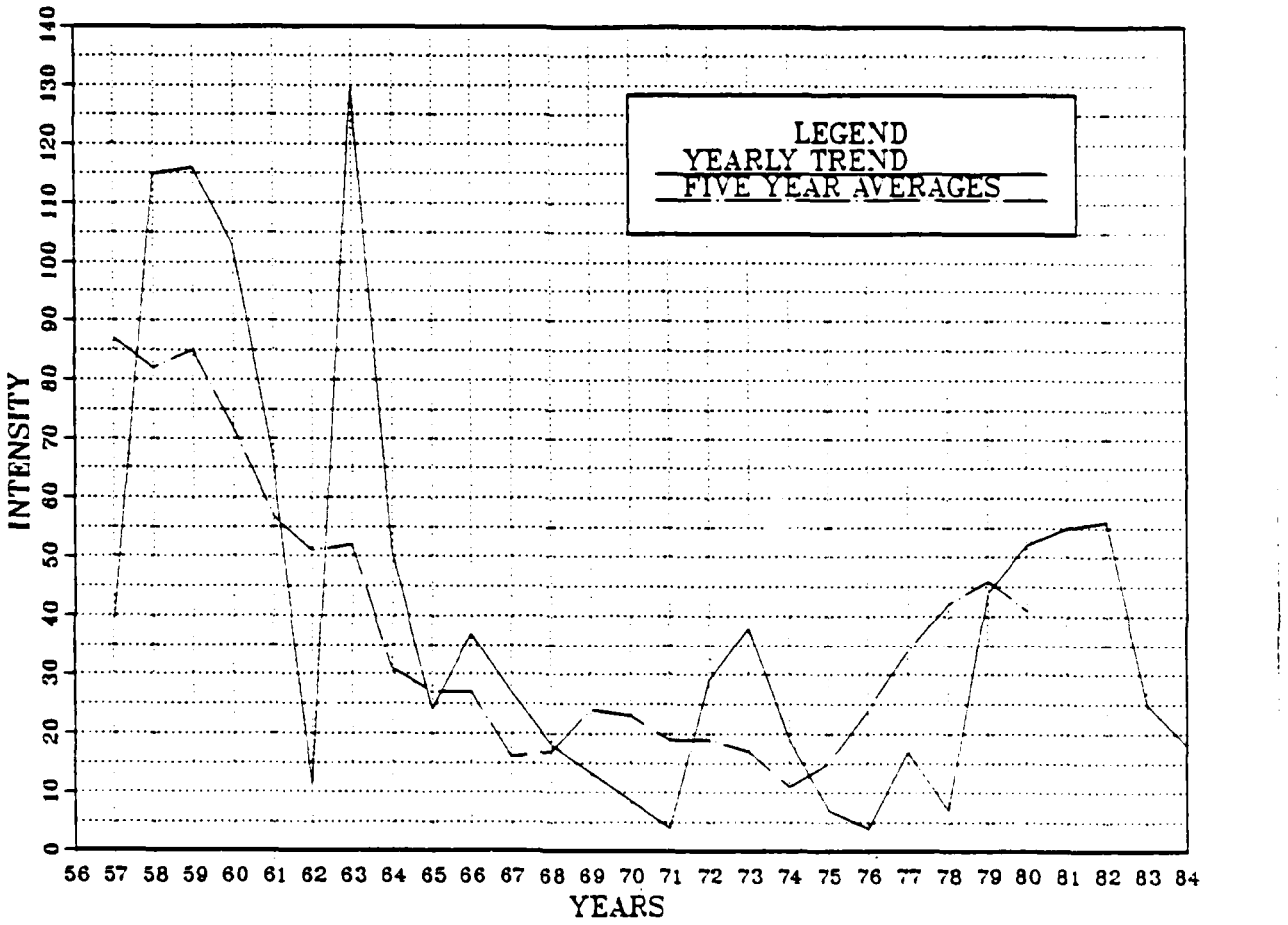

Figure 4.1 Results.

first flight in 1955 [Ref. 89: p. 477]. The MiG-21 came into service in 1958 and was capable of speeds greater than mach 2 [Ref. 88: p. 227] [Ref. 90: p.99]. Through the late 50's the US continued to increase the speed of its fighters and bombers and improve on missile technology. In 1956 the F-104 and the B-66 entered service along with a new infrared heat seeking missile, the AIM-9B Sidewinder [Ref. 90: p. 74]. The Sidewinder homed-in on infrared (heat) emissions from an opponent's aircraft. The missile traveled at Mach 2.5 and had a range of about 2 miles [Ref. 91: pp. 136-37].

Missile and jet technology in the 50's changed aerial fighting. In this second tactical stage it was believed that war would inevitably escalate from conventional to nuclear war and "will be demonstrated by a short, intense, massive exchange of nuclear weapons delivered by rockets and planes." [Ref. 86: p. 29] The large formations used in World War II were no longer necessary as one aircraft with a nuclear bomb could destroy entire army formations. The large close-in dogfights of WWI and WWII were being replaced by high speed jets trying to shoot down an opponent, who may be carrying a nuclear weapon, from miles away. Also, faster speeds made target acquisition and reattacks after a missed intercept more difficult. Radar and ground control of fighters became an integral part of fighter employment. [Ref. 85: p. 2]

In the third stage, beginning in 1960, the initial stage of nuclear war was considered decisive [Ref. 86: p. 30]. Readiness to prevent surprise nuclear attack was critical. Radar surveillance and positive control on protective fighters became a critical concern of the Soviet Air Force. Along with the nuclear doctrine came the development of air-to-air missiles and the ability to engage enemy aircraft well beyond the close-in gun fights of previous wars. Eventually, missiles could be launched at aircraft beyond

visual range (BVR). The "eyes" enabling missiles to "see" the targets were new radars. Early technology because of size and weight restrictions gave ground controllers a much better view of the air battle. Therefore, controllers grew in importance for directing fighters to their unseen targets. [Ref. 85: p. 3.]

In 1960 an improved ground control radar, the Barlock came into service [Ref. 92: p. 439]. In 1961, the Fishbed was given an improved air intercept radar R1L Spin Scan for use with the Russian version of the AIM-9--the AA-2 Atoll. The Atoll was made in two versions, infrared like the AIM-9B and one which was radar guided. Radar guided missiles homed in on radar returns from a target aircraft. The AIM-7 Sparrow, a longer range US radar missile, also came into service in 1961. Radar missiles such as the Sparrow and various models developed in the 60's that improved upon the original radar missiles were designed primarily for long distance engagements against targets that were many times not seen visually during the initial maneuver to set-up the intercept. Pilots were armed with weapons that were no longer guided by their own vision and their aircraft radars gave them only a crude glimpse of the target. Therefore, the pilots required assistance from ground radar operators who had a clearer picture of the fight. It is also interesting to note that the missiles developed in the 60's were not effective at close ranges--less than half-a-mile. The missile technology was not geared to dogfights or tactics of the last war but instead were made for long range intercepts. The epitome of Soviet technological development for this mission during the 60's was the long range, mach 2+ MiG-25 Foxbat which appeared in April, 1965 [Ref. 93: p.386].

As a result of these developments, traditionalist war fighting was replaced by a "new vision of nuclear

warfare . . . World War II took a back seat to the revolution in military affairs." [Ref. 86: p. 30] Emphasis on initiative which was high following the war began to lose ground. Pilots had to obediently follow the directions of the Ground Control Intercept (GCI) commander rather than use their own intuition, creativity and initiative to defeat an enemy fighter.

Along with the fighters, initiative in ground attack aviation was being lost. For example, auto pilots were developed which could fly an entire attack profile except for the take off, weapons aiming, and landing. [Ref. 94: p. 36]

The saving grace for any initiative to survive included the conventional role that the Soviet Air Force could still fight; incomplete radar coverage; single aircraft delivering nuclear weapons; and, most important, the WWII fighter pilots remaining in the Air Force command. Soviet doctrine in the 1960's held that in local conflicts the Air Force would fulfill its mission of aviation support to the troops. This entailed fighter cover and conventional interdiction and close air support missions. [Ref. 95: pp. 1-3] Some of these missions were preplanned in detail as were large air operations of WWII; however, they also left open an area which veteran fighters could argue in favor of initiative. WWII had proven planning could not predict every possible event in war and that pilots needed initiative to make decisions during battle. Veterans justified realistic training, freedom of action and the need to cultivate initiative in order to fulfill these missions.

In addition, incomplete radar coverage across the European theater justified the need to instill initiative in the new fighter pilots who would fly free hunt missions in the coverage gaps. Pilots would have to acquire targets, choose their intercept tactics and engage them without the aid of GCI. This required individual initiative.

In a similar vein, the nuclear weapons allowed a single aircraft to perform the same mission which earlier required entire formations. The lone fighter-bomber missions were preplanned, but pilots would need initiative to make decisions if the preplanning failed. Similarly, commanders would need initiative to carry on their missions in the event of communications being disrupted by nuclear attacks. The surprise of a nuclear attack could leave insulated units paralyzed unless unit commanders had the initiative to carry on their combat.

For the above reasons and their personal experience, the WWII veterans spoke strongly in favor of initiative. By their survival, these pilots realized the need for freedom of action for unit commanders and individual pilots.

Through the early 1960's, the appeals for initiative were gradually drowned out by the extreme concern for safety and the improvement in technology. Nearly every issue of Aviation and Cosmonautics included articles which stressed discipline, adherence to regulations and safe operations. The over emphasis on safety constrained exercises and training. Commanders held innovation back for fear of getting bad write-ups for safety violations or accidents. Articles on initiative diminished and all but disappeared.

In addition, technology in the 1960's through the 1970's allowed increased command and control on a broad scale and over individual pilots. Radar coverage and GCI sites increased. Also, automatic flight control systems were improved to further potentially reduce the pilot's role. And, an automatic flight recording system (SARRP) allowed commanders to check on a pilot's compliance with prescribed mission profiles. Pilots were actually criticized for performing one more additional aileron roll than the mission called for! The combination of technology and bureaucratic over concern for safety reduced initiative in the Soviet Air Force.

The rise in initiative in the 1970's and 1980's was preceded with a change in doctrine. In the late 1960's, military writers began discussing the beginning conventional phase of the next war. [Ref. 86: p. 31] In 1969, Maj Gen Zemskov wrote, "In time a conventional war can be of long duration." [Ref. 96] Nuclear war was no longer inevitable. Russian historical experience called for the "continuing need for a large conventional force." [Ref. 86: p. 33] The opening conventional operation became an increasing possibility for destroying NATO's nuclear capability before it was used against the Soviets. The air operation expanded as part of an overall combined arms Blitzkrieg type strategy against NATO's central region.

To accomplish this conventional mission, scientific methodology and preplanning had to be combined with individual initiative. Once again, veteran fighter pilots argued that initiative was necessary to be successful and survive in combat. These arguments had to mesh with the "scientific" methodology which had become intrenched in the Air Force bureaucracy in the mid-1960's. Thus, a synthesis with science, methodology and initiative was developed. Just as in the late 1950's and early 1960's, commanders were once again criticized for being overly cautious and too safety minded. Training was called upon to be more realistic to allow freedom of action for pilots and the development of initiative.

Technology began to shift with the doctrine in the late 1960's. The results were improved performance in aircraft, radars, and missiles which improved individual pilots' capabilities and their capabilities to operate with the GCI operators. The Jay Bird radar in 1970 gave Fishbed pilots a better picture of the fight. In 1971 the MiG-23 entered service and in 1973 it was given the High Lark AI radar [Ref. 97: p. 127]. This radar allowed pilots improved

ability to autonomously search for targets. In 1977 the AA-7 Apex SAR/IR missile was added to the inventory to compliment the improved radar. In 1978 the AA-8 Aphid AAM appeared [Ref. 98: p. 166]. The AA-8 was specifically designed for close-in dogfights. As pilots's radar vision improved and they had both long-range and close range missiles, technology was moving away from single pass intercepts guided primarily by the ground controllers, to dogfights controlled by the pilots in the air.

The USAF led the way in these developments with the deployment of the highly maneuverable F-15 in 1974 [Ref. 90: p. 82]. The F-15's radar gave the pilot the ability to track multiple targets simultaneously and choose which ones to engage. It gave the pilot a new pair of eyes with long range; and, as in the world wars, many times the pilot with the best eyes who could spot the enemy first would get the kill. The new radar took the eyes from ground control vans and put them in the cockpit. In 1978 the F-16 entered service. This aircraft is clearly a return to dogfight tactics because it was designed to be the most maneuverable aircraft in the world and was not given a long range radar capability of the F-15 because the radar's weight would have reduced maneuverability. Pilots would rely on their own eyes, cues from the new US AWACS, and heat seeking missiles.

Responding to the US lead in technology and in agreement with their own shift in doctrine, the Soviets developed highly maneuverable aircraft, the MiG-29 Fulcrum which appeared in 1979 and the SU-27 Flanker appearing in 1982 [Ref. 99: pp. 97-112]. These new aircraft were being put into service at a time when, overall, initiative appears to be rising. Improved technology gave pilots improved autonomous operations capabilities. However, Soviet developments which follow US technology cannot be assumed to be used in exactly the same way the US uses its technology.

Along with new fighter technology the Soviets have also developed improved methods of control, such as the Mainstay Airborne Warning and Control (AWAC) aircraft. This aircraft's inservice date of 1984 [Ref. 99: p. 103] coincides with the downward drop in initiative in 1983-84. This may be pure coincidence and the Soviets may use the Mainstay simply as an improved radar warning system. On the other hand, the Mainstay may be a vehicle for placing controllers closer to the pilots with improved radars. Controllers onboard the Mainstay could be linked directly with commanders of flights of Su-27 type aircraft. Or, if the Su-27's radar is similar to the F-15's in being able to track multiple targets while scanning [Ref. 100: p. 75] then Su-27 flight commanders could themselves act as mini-controllers guiding their flight's every move and removing the necessity for flight elements to make decisions on their own. This is to date, however, only speculation.

Since 1982, there has been a re-emphasis on the nuclear character of a future war [Ref. 86: p. 34]. Doctrinal rhetoric indicates a concern for the development of defenses against conventional arms and stresses the inevitable use of nuclear weapons to achieve victory at the theater level [Ref. 101]. This return to Kruschevian rhetoric may be a signal of a return to a decline in emphasis on initiative This could partially explain the downward drop in the content analysis for 1983-1984. (See Figure 4.1)

In the years following WWII, it is impossible to say if technology has driven doctrine or doctrine has driven technology. There does exist a very close relationship between the two; each influencing the other. In turn, as doctrine is affected by technology (or vice versa), so too are tactics affected which must stay in step with doctrine and technology. WWII tactics had to be modified and changed to work with jets and missiles. Improved radars, missiles,

and aircraft impacted on the tactics of the 60's and 70's. Finally, interwoven among the tactics is initiative. In the 60's with crude radar, the new high speeds of jets made tactics with initiative unworkable. Improvements in technology have given the pilots the tools necessary for initiative, but at the same time technology has also given the Soviets the necessary tools for controlling fighters from the ground and in the air. Figure 4.2 shows technological developments overlaid on the trend of initiative.

In general, tactics have followed the progressive loss and regaining of emphasis on initiative shown in the content analysis. As will be shown in the yearly descriptions, they moved from relatively fluid two ship formations following WWII to single ship interceptions mechanically flying under GCI control to once again two ships with some freedom for the developing wingmen and finally multiship flights similar to WWII employments. (See Figure 4.3) The time periods for the tactical changes are flexible and are marked on the graph to demonstrate trends more than absolute dates. (Current tactics and the Afghanistan influence will be discussed in the following chapter.)

2. Yearly Descriptions

The following comments and quotations express the emphasis and tone in the rhetoric on initiative in a given year's articles in Aviation and Cosmonautics. Over the years the emphasis noticeably shifts as the quantitative analysis on initiative demonstrated.

a. 1957

Emphasis was on individual freedom of action due to increased speed and wider formations.

"In conjunction with this, the role of individual initiative and independent actions of a pilot becomes more important." [Ref. 102: p. 16]

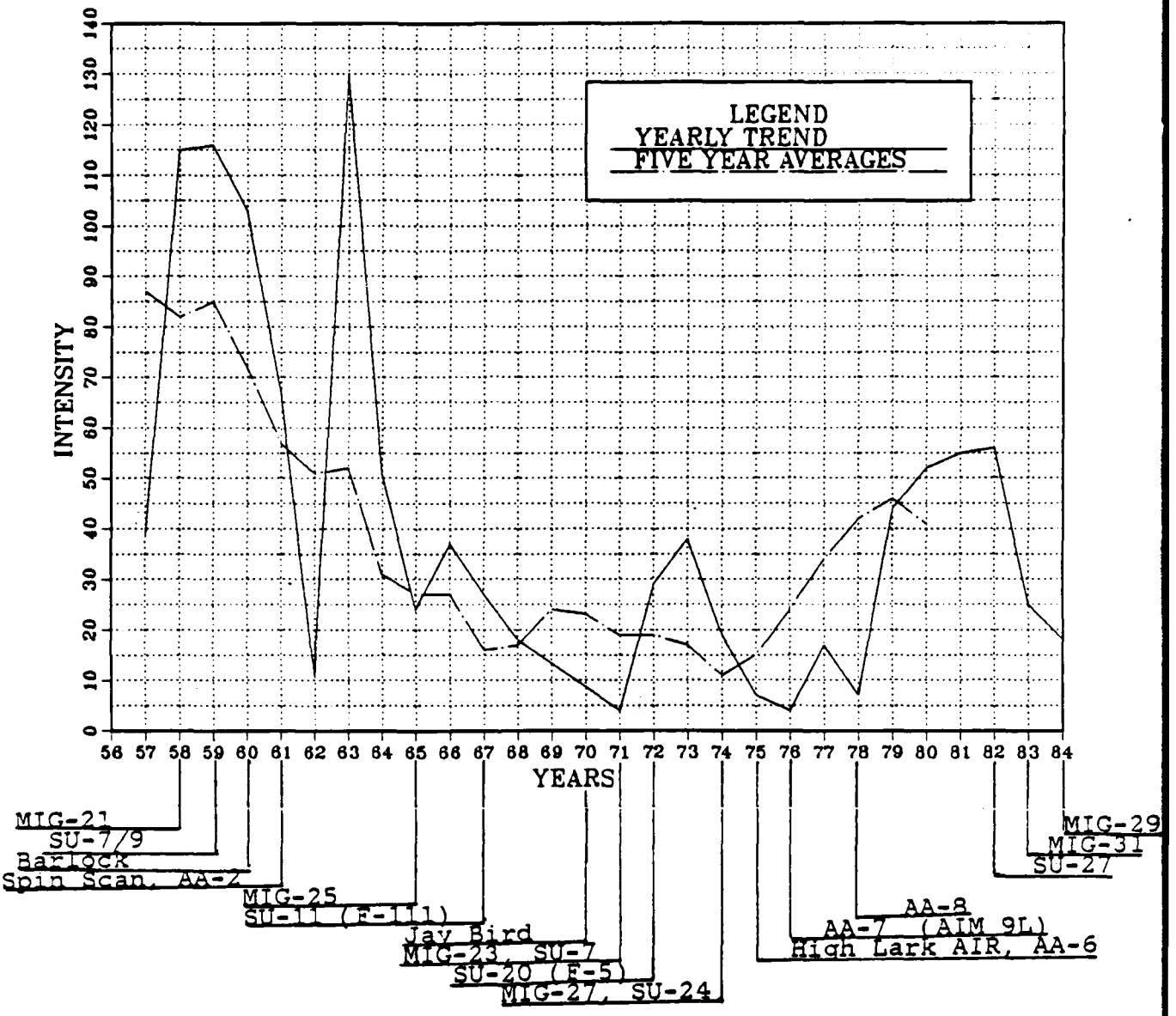

Figure 4.2 Technology and Initiative.

"It is best to conduct sham battles over the airfield so that fight personnel can observe the ground dynamics of the entire combat. For fighters this combat must be free and creative." [Ref. 103: p. 14]

Complaints were made of "excessive caution" which led to crews being told everything that was to happen "down to the finest details." This trains pilots to "operate in a routinized manner and passively, without the necessary combat stress . . . the harm of such an approach to training is obvious." [Ref. 104: p. 4]

b. 1958

Unlike the modeling in the 1970's and 1980's, for tactical air briefings, "the officer in charge of the exercise did not outline in advance any of the possible decision variants, feeling that this would commit him to a decision and would fetter the initiative of the flying personnel." [Ref. 105: p. 34]

"And moreover, the situation can change suddenly even when the crew is aloft. The flying personnel and commanders aloft will have to react somehow to this change and make independent decisions." Preplanning exercises does not teach this. [Ref. 106: p. 26]

During combat, the pair must be able to split for close cooperation and mutual support. The wingman must have initiative to carry out counteroffensive maneuvers against attackers (See 4.4). [Ref. 107: p. 17]

If the attackers follow lead, the wingmen performed a combat turn to reposition for a shot on the attackers. The author emphasized the independence of each pilot and their mutual support in a number of scenarios of counter offensive maneuvers. Later, in 1964, these types of maneuvers were named and executed on the lead's command. In 1958, the wingman's actions were encouraged to be on his own accord while executing the named maneuvers.

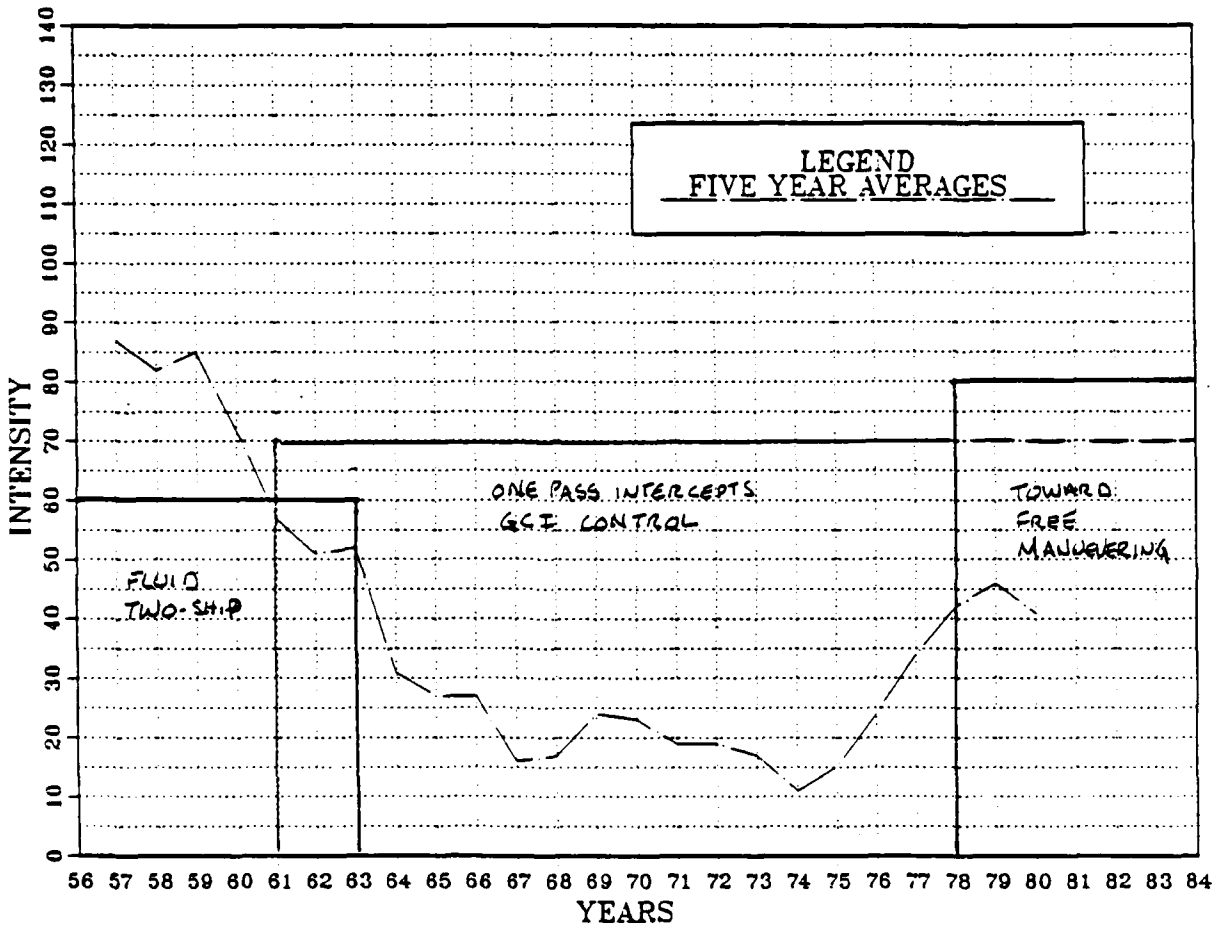

Figure 4.3 Trends of Tactics and Initiative.

Figure 4.4 Wingman Initiative/Mutual Support.

c. 1959

"Present-day aerial combat has become so brief that the pilots cannot wait instructions from the commander as was the case before." The wingman must be free. [Ref. 108: p. 77]

"Independent decisions require initiative . . . excessive prompting from GCI fetters initiative." [Ref. 109: pp. 22-24]

"In combat practice to carry out the mission pilots had to take responsibility upon themselves in the course of a flight and change the original decision."--Maj Gen of the Air Force, A.I. Kurochkin [Ref. 110: p. 29]

There seemed to be a major push for initiative by generals of the Air Force including Lt Gen S.F. Ushakov, Hero of the Soviet Union. They were concerned with passivity and fear of risk-taking causing a loss in fighting capability and this included a loss in decisiveness and use of initiative by their pilots.

d. 1960

"Extreme preplanning for routine training. Basic aerobatic maneuvers were planned and diagramed for training missions." [Ref. 111: pp. 37-41]

". . . aviation equipment has become so developed that a pilot cannot any longer rely on his senses

alone." High speed intercepts without good airborne radars forced pilots to rely on GCI assistance to find targets. The pilot is not completly passive, but acts with initiative in the engagement phase. [Ref. 112: p. 8]

Despite these negative impacts on initiative, Marshal of the Soviet Air Force and Hero of the Soviet Union, S.I. Rudenko (Commander of the 16th Air Army during WWII) wrote:

> In exercises some instructors sometimes describe before in detail how the flight personnel must act in the air and make them memorize selected diagrams in the course of training. There is no need to prove that this leads to routinism and fetters the initiative of pilots and commanders. After such training, when the situation changes in the air, the pilots either simply do not react to it or find themselves in a complicated situation . . . commanders of small units must be allowed the necessary independence so that they can learn to make tactically sound decisions quickly in accordance with the situation. [Ref. 113: p. 112]

e. 1961

A shift from initiative to command post control; its impact is felt today.

> The controllers did not argue about initiative being a good thing, but claimed that success during vectoring is decided by strict compliance with commands. If there is no compliance, the most precise calculations made even by a computer may go to pot. [Ref. 114: p. 30]

A wingman takes initiative in the attack after asking permission to do so. [Ref. 115: pp. 86-87]

In most intercept situations initiative is being taken from the pilots as they follow the commands of the controllers. However, in a low altitude attack, when pilots are faced with a new situation, they are told to act first to destroy a target and then tell the command post about it. [Ref. 116: p. 43]

f. 1962

Success depends on scientific calculations. "Superior results will come only when the pilot learns to carry out a maneuver while maintaining the assigned parameters." [Ref. 117: p. 63] Pilots are told to "maintain prescribed G-loads, speed, and altitude." Tables are drawn up to scientifically show the proper flying techniques. "Each combat employment flight must be precisely planned now and this requires a high level of theoretical training." [Ref. 118: p. 38]

Independent nuclear operations still require initiative as individual pilots "will have to act and make a decision in accordance with an aerial situation independently." [Ref. 119: p. 5]

g. 1963

A reversal and direct challenge to some of the concepts presented in 1962, 1963 shows a high emphasis on initiative regardless of the risk involved.

> pilots must be given more independence in carrying out tactical training flights . . . it is necessary to give them the opportunity to estimate for themselves the flight - the profile, speed, approach direction, types of maneuvers, attack methods, etc. [Ref. 120: p. 39]

During tactical exercises, . . . "instructors teach the pilots to make independent decisions and put them into practice." [Ref. 121: p. 61]

> It may happen that the initiative displayed will not produce the desired result in combat at once. After all, anything can happen in war. But, even then, the officer who has acted with initiative does not deserve reproach, since he strove to carry out the assigned task with everything in his power. We can and must reproach the one who hesitates to make a decision, fears responsibility, does not act, and does not use at the right moment all the capabilities and means for winning a victory. [Ref. 121: p. 63]

h. 1964

Primary mention of initiative dealt with independent nuclear operations and free hunt operations to destroy the enemies' nuclear weapons. [Ref. 122: pp. 2-4] Otherwise initiative declined as pilots were encouraged to "act strictly in accord to the specific situation." [Ref. 123: p. 16] Elaborate equations are drawn out to determine times over targets. [Ref. 124: pp. 74-80]

i. 1965

Initiative is still considered necessary for combat [Ref. 125: p. 28] and a young pilot asks in a letter, "why are we afraid of initiative or a risk if it has to be taken? Is risk only possible in war? Why is the initiative of young men often fettered?" [Ref. 126: p. 32]

However, this was greatly overshadowed by articles on automating the control of aviation; the use of preprogrammed autopilots, and scientific quantification for commander's decisions [Ref. 127: p. 45].

> Automation "amounts to having the entire flight, i.e., climb, the movement along the trajectory, the letdown, the prelaunching maneuver, and the landing carried out by automatic devices." The role of the crew amounted to tasking and operating the computer. Although much of what the writings referred to was theoretical, the emphasis was away from individual control towards automation and preplanning. [Ref. 94: p. 36]

j. 1966

Most discussion on initiative is now seen in negative comments by authors aware of the problems in training saying we've got to stop "fettering initiative." The loss of initiative is to the point that overprotected student pilots are no longer reacting to emergency situations but have to be told what to do. [Ref. 128: p. 65] Criticism is still made of over-simplification of exercises, pilots memorizing tactics and operations so that the "write-up" of the exercise looks good; despite the fact that

regulations "do not impose restrictions on their (pilots) initiative but on the contrary provide much room for this." [Ref. 129: p. 97]

k. 1967

Mention of the wingmen spotting a target first and attacking while calling his intentions to lead. The spread formation allows for initiative and freedom of action. [Ref. 130: p. 118] Overall, little mention of initiative in the writings.

l. 1968

> There is no longer any place at all for intuitive predictions in the development of air force tactics. The time has come for a profound scientific approach to these problems . . . now calculations, graphs and nomograms are the basis for answering any questions in tactics for drawing conclusions, and for establishing recommendations. [Ref. 131: p. 34]

Criticism of exercises lacking realism held solutions to be in improved methodologies and detailed plans, not more freedom of action as was proposed in similar articles of the 1950's [Ref. 132: pp. 28-34]. In addition, BVR missile engagements are described as requiring GCI assistance; automatic control is improved; and the SARPP (Automatic recording system for flight parameters) is touted as a great tool for ensuring flight safety and maintaining control. The SARPP monitors altitude, speed, RPM, horizontal axis level, angle of deflection of the stabilizer, and 9 other flight characteristics. A proper reading of the tape read out could recreate an entire flight. [Ref. 133: p. 174]

m. 1969-1970

No data.

n. 1971

Primary emphasis was directed at developing increased objective control and consistent pilot responses.

The solution proposed was the development of a "uniform methodology for training flight crews." [Ref. 134: pp. 32-33]

Training should differ little from actual combat; a WWII veteran recalls that victory belongs to the fighter with initiative and "this type of flight will require him to think a great deal while resolving a complex set of tasks." However, "strict sequential instruction methods should be employed . . . ." to achieve these results. [Ref. 135: pp. 44-47]

o. 1972

The new generation of pilots "at times some of them express the opinion that such concepts as initiative and activity in battle have become outmoded and that now neither the pilot nor the crew can allow the slightest deviation from the previously prepared flight plan or the instructions of the command post . . . often a pilot must decide for himself the method of destroying an assigned objective . . . then the success will depend to a decisive degree on his initiative." [Ref. 136: p. 8] The 'scientific' training system has permeated down to the common pilot; however, veterans still realized initiative will be required in battle.

p. 1973

Both extremes against and for initiative were strong in 1973. Against initiative were articles slandering daredevilling.

> It has happened that individual aviators have permitted themselves to willfully change the conditions, procedures and sequences of exercises . . . under the auspicious pretext of "an experiment", "initiative" or "a desire to test oneself in strength of will." [Ref. 137: pp. 3-4]

Also,

> a resolution was passed which obligated communists who were instructing young people not to allow fooling around during combat employment flights . . . to strictly carry out the laws of air service and obey the demands of safe flights. [Ref. 138: p. 12]

These comments indicate that pilots were in fact exercising their own initiative outside the control of command and this was deemed a serious problem.

On the other hand, those in favor of more initiative were writing: "too detailed a plan stifles initiative in battle." [Ref. 139: p. 41] Also, "combat experience teaches that success would be achieved by those commanders whose decisions and actions contained no rigid stereotype, whose subordinates displayed initiative, innovativeness, and boldness." [Ref. 140: p. 18]

q. 1974

"Rigid observance of requirements and appropriate methodological principles" was the main emphasis. Although, once again WWII examples were used to illustrate initiative, such as "the wingman frequently became the leader, and the leader, in turn, covered the attacker, supporting him or adding to the weight of the attack on the enemy." [Ref. 141: p. 3]

Also, an article against daredevil stunts recounted the events of a Lieutenant disconnecting his SARPP recorder in order to "hedgehop;" that is, fly at a lower than authorized altitude. The pilot was dealt with severely and was made an example to discourage these types of activities. [Ref. 142: p. 8] Thus, one of the best examples of free spirit was squelched. Also, the fact that this problem was written about indicates it was probably not a one time occurance; but, was considered a grave enough problem for the Air Force leadership to dissuade any other pilots considering such 'free flying'.

r. 1975-76

The main theme for this period was somewhat of a balance between control and initiative. "Improve flight control . . . tight control does not fetter initiative." [Ref. 143: p.11] ". . . train flight personnel in a creative, scientifically sound manner." [Ref. 144: p. 44]

s. 1977

Modeling is considered good to a point, but in free air combat, one cannot depend on a memorized sequence. A synthesis developes between using a simulation method or model that is scientifically based and "innovativeness, that is, the ability to find a correct solution in non-typical situations." [Ref. 145: pp. 2-3]

t. 1978

During this year there was little mention of initiative outside of a few comments about teaching cadets to independently analyze their flights and make independent decisions while flying [Ref. 146: p. 171].

u. 1979

"In a fluid engagement where the situation changes abruptly every second . . . and this is confirmed by the experience of the Great Patriotic War . . . only the fighting man with initiative can be victorious." This is developed in training by a "situation approximating combat to the maximum possible extent." Articles stated that the way to do this is through creative modeling and during the flight making necessary changes through initiative. [Ref. 147: pp. 4-13] Once again, initiative is spoken of in a more positive manner, only now it is blended with the scientific solutions.

However, on the negative side, a pilot who showed aggressiveness and initiative during a dogfight which he won is given a two week probation for overstressing the aircraft beyond the "scientific" limits of a proper

maneuver. Thus, the ingrained control mechanisms remain and may prevent a great development of initiative. [Ref. 148: pp. 36-40] No matter how good the initiative may have been, once it goes beyond the approved boundaries it is completly wrong.

v. 1980

Training exercises during which the entire squadron pretends to be an element commander or squadron commander are conducted. Participants try to solve tactical problems. "Crews acted intelligently and displayed initiative and independence when solving complicated tasks." [Ref. 149: p. 17]

Over formalization and stereotypical training and modeling is criticized during exercises. "In a real combat situation the commander's lack of initiative could have cost many lives." [Ref. 150: p. 66] "The development of a commander's ability to think independently and to make decisions is a subject of constant concern for senior commanders." Commanders are told to force their subordinates to decide on their own to increase their confidence. [Ref. 151: p. 27]

w. 1981

'Everyone should be creative in tactics.' If leaders help new pilots in finding original procedures, they'll develop a "taste for independence" and this is actually encouraged! [Ref. 152: pp. 11, 12] "Each airman is granted the right to independently seek for and implement the best solution for the assigned mission." (Under a commander's authority). [Ref. 153: p. 29]

x. 1982

Almost full circle in return to the position on initiative 20+ years earlier; over concern for safety is criticized and initiative among wingmen is encouraged. Commanders "who, in the race for high indicators in

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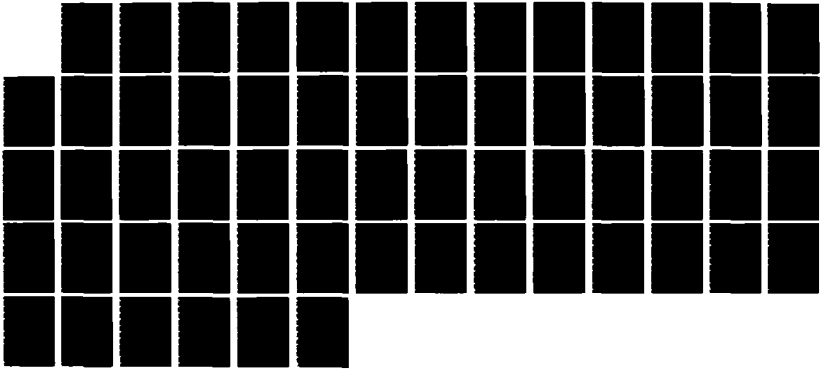

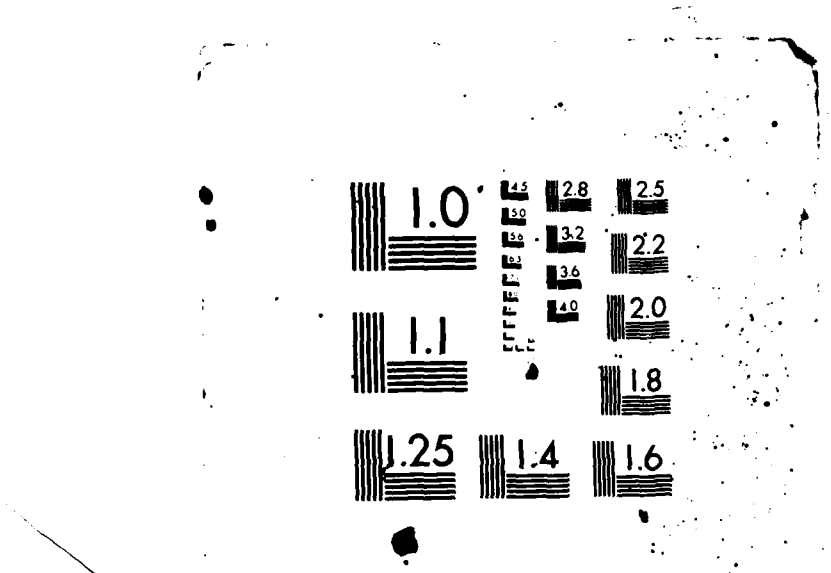

fulfilling the flight training plan, try to simplify the aerial situation when working on tactical problems. They often fly the same patterns over and over again, and their tactics are never distinguished by novelty either." [Ref. 154: pp. 3-4]

"Basic attention should be given to mastering tactical cooperation so that each pilot in a two-plane element could successfully perform the functions of both the wingman and the leader and, when necessary, to operate individually . . . ." [Ref. 155: p. 28] "Every pilot is both a shield and a sword." This means an enemy will be attacked by the pilot for whom it is easiest to use his weapon while his partner backs up the attack, and, if necessary, applies pressure. [Ref. 156: p. 18]

Initiative is once again proclaimed critical for success.

y. 1983

Proclamations for initiative are held tightly in check by proponents of modeling and those concerned with safety. Stereotyped training is said to stifle initiative. [Ref. 157] However, others say "improvisation is a thing of the past. Innovation cannot disappear from our profession." The innovation they spoke of was that in models and new scientific solutions. [Ref. 158: p. 13]

Again, "daredevils" such as a student pilot whose SARPP read out showed he had flown two - too many rolls during a training mission are reprimanded and grounded out of an over concern for safety and a fetish for flight discipline [Ref. 159: pp. 54, 55]. The result is that "attention of the regimental flight instructors was directed toward increasing control over the methodological training of the group leaders." [Ref. 160: p. 11] It is almost as if the leadership fears the initiative and freedom in flight will spread like wildfire to other units (and perhaps even beyond a military context into society at large).

z. 1984

Discussion on initiative in data available was very low. Articles on roving free hunt, which in previous years mentioned initiative, make no mention of individual initiative. Description of the wingman was not of an independent fighter as was the case two years earlier. [Ref. 161: pp. 45-49]

3. Summary

Initiative was a part of the Soviet Air Force throughout the period studied; however, it clearly rose and fell in influence with changes in doctrine and technology. Even though pleas were made in the late 1950's and early 1960's by some of the leading generals of the Air Force, the momentum of preplanning and technology slowly extinguished individual initiative to a large degree from the new fighter pilots being trained. Safety violations and deviations from the planned training scenario were the only avenues for expressing creativity and initiative while flying. These were exposed through the monitoring systems and dealt with severely--to the extreme that an extra aileron roll in training led to the pilot's being grounded for a week. The same lobbyists for initiative in the 1960's appealed again in the mid 1970's, WWII veterans who knew the true value of initiative. The emphasis on initiative has risen sharply in the late 1970's and early 1980's; although in 1983 and 1984 it has taken an apparent drop. This reemphasis points to the fact that the lack of initiative is a real problem in the Soviet Air Force. For over two decades now, their training has become "routinized" and unrealistic. The protagonists of initiative are trying to change that. However, as will be covered in more detail next, the prognosis is not good. A campaign for initiative nearly twice as strong in the journal twenty years ago did not stop its decline even though the war memories were only 15 years old.

Now, the bureaucratic momentum of scientific modeling and further improvements in electronic command and control could be an even greater opponent to initiative. (This could, in part, explain the drop in emphasis during 1983 and 1984). The bureaucratic leadership may be attempting to hold to a minimum any gains in initiative for fear of possible political consequences. This could possibly explain the sharp drop following the rise in emphasis which peaked in 1973 and 1982. The ideas of the Soviet collective left unchallenged by combat experience may stamp out the anomaly of individual initiative given a long enough period of peace.

V. CURRENT TACTICS AND TRAINING

Current Soviet air tactics and training for conventional roles of the air force are not new; but, rather a repackaging of old tactics and doctrine of WWII and the late 1950's. Since approximately 1979 with the resurgence of emphasis on initiative, tactics have changed from simple one pass intercepts to more maneuvering combat.[14] Currently, the Soviets are combining 'scientific' methodology to justify and prove the concepts of bygone tactics. It is believed to be an attempt to regain the initiative that existed but was lost. As shown in the previous chapter, discussions today by leading Soviets about the freedom of the wingman and increased arsenals of tactics to choose from are a return back to the tactical thoughts that emerged from WWII. They are not breaking new ground as is thought by some Western intelligence analysts[15] but are retrenching old ground with computers on their backs. One Soviet General spoke of this necessity of bringing back tactical concepts of the past, including the initiative that accompanied them, saying:

> Is it possible that I am fighting for the past? Has the development of new equipment and weapons made frontline soldier's mastery of combat, tactical findings, and creative approaches obsolete, stripping them of their instructiveness and educational value?

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[14]Some analysts feel this shift is a result of the Soviets observations of the US experience in Vietnam and the Middle East wars. Rather than long range missile engagements, air combat in these conflicts frequently resulted in maneuvering dogfights., See O'Brien, Frank J. Every Man A Tiger, also Pennington's articles in Air Force Magazine, March 1984 and March 1985.

[15]See Pennigton, Rana J. Capt, USAF "Closing the Tactics Gap," Air Force Magazine Mar 84, p. 83 and "Another Look at the Soviet Pilot," Air Force Magazine Mar 85, p. 83.

He went on to say training was completly unrealistic because, "the pilots imitating the target fly only in a straight line without changing altitude and speed." [Ref. 162]

The Soviets do not openly and thoroughly describe their current training programs and tactics. However, a remarkable similarity between descriptions from the 1980's and those of the 1950's and early 60's was noted. For example, the recent complaints by Soviet Air Force leadership about unrealistic training, oversimplification, and the need for pilots to make independent decisions and take risks while in the air is a mirror image of the same complaints being made 20 years earlier. Because of this and many other similarities, some of the more detailed descriptions of tactics written in the 50's and 60's were used along with the pieces of current tactical descriptions to extrapolate and estimate current training and tactics and their allowance for initiative. The question is whether or not their complaints are having any impact.

A. AIR-TO-AIR TACTICS

It is evident the Soviets today are talking about returning to previous tactics which allowed pilots to act and make decisions on their own while airborne. This can be seen by developments in areas such as, the wingman's initiative, air-to-air combat maneuvers, and GCI control versus independent search.

1. Wingman's Initiative

In the 1980's, attention has once again been drawn to making wingmen proficient:

> basic attention should be given to mastering tactical cooperation so that each pilot in a two-plane element could successfully perform the functions of both the wingman and the leader and when necessary also operate individually, using all available information. [Ref. 163: p. 28]

Also, General Lieutenant of Aviation S.V. Golubev, Chief of the Soviet Air Force Combat Training, said of pairs: "pilots in a pair must always be ready to switch their roles-that is, the strike must be made by the pilot in the more advantageous position." [Ref. 164: p.85] These same types of arguments in favor of wingman's initiative were made in the early 60's. Then, in class room training, both element lead pilots and wingmen were given tactical problems and challenged to make their own solution to the problems. [Ref. 165: p.24] As the theoretical support for initiative is similar in the 60's and 80's, so too is the current training syllabus to instill initiative in pilot skill for leads and wingmen probably similar to one 20 years ago.

2. Air-to-Air Combat Maneuvers

Current training is designed for maneuvering combat.[16] The training begins with theoretical training, followed by single ship aerobatic work, then single-ship air combat maneuvers. The pilot is then trained to work in pairs and fourship formations and is finally tested during tactical flight operations. Current training emphasizes the inclusion of initiative in the final process of training:

> Usually, when preparing for air combat, a pilot first rehearses a number of standard offensive and defensive maneuvers, which subsequently give him a foundation in highly-maneuverable air battles. This is a logical stage in our development. But the practice of executing one and the same maneuvers, engagement after engagement, during repeated rehearsal and drill, has hardly proven effective. As experience indicates, such an approach to

[16]This is a change from pure intercept training which had evolved from maneuvering combat of WWII and the late 1950's. Air-to-air missiles, GCI control, etc led the Soviets to believe most air engagements would be long range single pass intercepts. In addition, the Soviets' new aircraft, the SU-27 Flanker and Mig-29 Fulcrum may once again provide maneuvering capabilities that match that of US aircraft or exceed US capabilities as was the case of the Mig's superior turning capability over the F-86 Sabre during the Korean war. See Spick, Mike, Fighter Pilot Tactics, The Techniques of Daylight Air Combat, Stein and Day, 1983, p. 124.

> training thwarts a pilot's initiative and leads to predictable routine. A pilot must get away from this. The experience of the men who fought in the Great Patriotic War convincingly attests to its fatal consequences. [Ref. 166: p. 39]

This progressive system of training pilots is not unique but was discussed openly during the 50's and 60's. Instructors were told to use an individual approach and bring the students to the next phase in training only when they are ready. For example, the following is taken from 1957:

> When the basic training (piloting) for the young airman was over, Lysakov (the commander) took all possible measures to provide simulated aerial combat conditions for perfecting flying techniques and their combat application. As the airmen of the squadron would master the difficulties of one set of training exercises, the commanding officer would assign new and more complex tasks. [Ref. 167: p.2]

The missions progressed to multiship combat engagements, just as the 'new' syllabus of the 80's is designed.

Just as the syllabi are similar, the training maneuvers for wingman flexibility and initiative are probably also similar. There is no indication in the open source writings of any radical changes.[17] Previously, training was accomplished by the element leader calling the name of a maneuver to be executed. The pair would then fly the prescribed maneuver such as a combat turn, wingover, loop or their aerobatic maneuvers.[18] [Ref. 168: pp. 37-41] As the pilots progress to flying in a pair during simulated combat, the lead calls the maneuver for the wingman to perform in

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[17]In fact other analysts have concluded that tactical writings nearly 15 years old are useful because the tactics described will not change drastically. See Kieling, p. 66. This thesis contends tactics of even 25 years ago are similar because they are founded on the same tactical concepts of maneuvering combat.

[18]A combat turn is a climbing 180 degree turn used in air-to-air and ground attack tactics. The Soviets' term wingover refers to a maneuver similar to a split 'S' - a half roll and 180 degree descending turn using the vertical.

reaction to being attacked [Ref. 169: p. 27]. As the wingman becomes more proficient they can decide independently on their own initiative the correct counter offensive maneuver to use.

In most of these maneuvers, the attackers are predictable and attack as a pair only one target. This means most of their training is unrealistic in terms of Western tactics which call for attackers operating independent of each other once the fight is on. [Ref. 170] The Soviet attackers seem almost passive as though the entire scenario is prearranged. There are no indications either in current literature or that of the 50's and 60's of training engagements evolving into free flowing multi-turn dogfights typical of US fighter training. This aspect of current training, though it is an attempt to develop initiative, falls short of the Soviets' WWII experience with air combat.

Following are examples of the counter-offensive maneuvers believed to be a part of the current training program to develop initiative. These are taken from a 1958 program [Ref. 171: p. 17] ; however, as stated above, the current reemphasis on developing wingmen initiative and statements from Air Force leaders supports the assertion that current training programs closely resemble previous programs designed to instill initiative.

In the first case, Figure 5.1, the attackers stay on lead as he performs a hard horizontal turn. The wingman executes a combat turn to position himself for a shot on the attackers. This maneuver was described in Squadron leader Harbison's report on the tactics use by Migs in Korea. The defensive split instantly "poses a problem for the attacking pair of which one to follow." [Ref. 81: p. 126]
The tactic allows the defensive pair to use their initiative and turn the tables on the attacker. Also, it can draw the adversary to disadvantageous altitudes by use of the

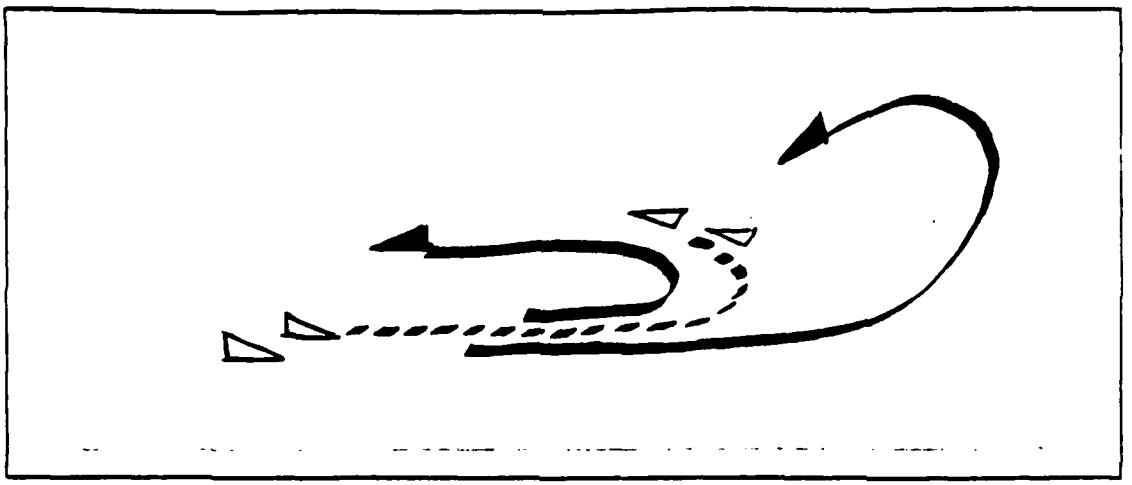

Figure 5.1 Wingman's Shot.

vertical. This is exactly what Soviet Air Force tacticians Babich and Dubovitskiy were driving at in a 1977 Aviation and Cosmonautics article:

> The adversary should be drawn to a disadvantageous altitude by a combat formation in which one group engages, while the covering group continuously attacks the adversary vertically. It would be a gross error to change to horizontal maneuvering immediatly following the first pass. The initial altitude advantage should be maintained during the entire engagement and be expended very economically. In the war in Korea, the enemy's combat formation would be split by a dagger thrust by the lead group, while the attack group would attack the enemy aircraft, which were deprived of support. [Ref. 81: pp. 126,127]

The reference to the tactics of the Korean war by leading tacticians of the late 70's further support the similarities of current training programs to earlier ones which were geared for maneuvering combat.

In a second case, if the lead pulls a horizontal turn and the attackers follow the wingman begining a combat turn, the wingman decides to perform an oblique loop to bring the attackers around for a shot by lead. (Figure 5.2) A third variation has the attackers splitting, although both aircraft are attempting to get a shot on the lead aircraft.

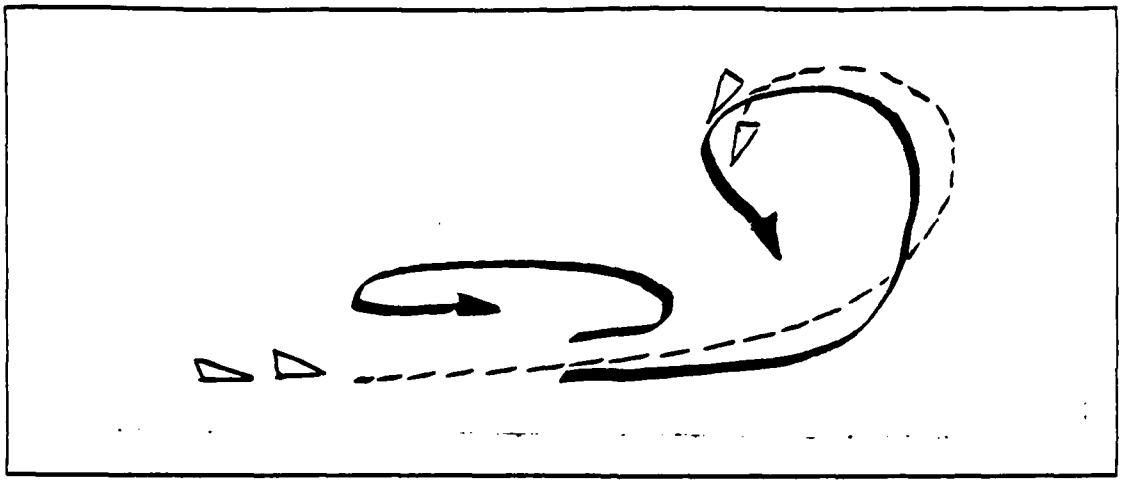

Figure 5.2 Lead's Shot.

The counter offensive response has the lead and wingman do combat turns in opposite directions. The wingman foils the shot of the right attacker, rejoins the lead and both disengage by a sharp descending maneuver. (Figure 5.3)

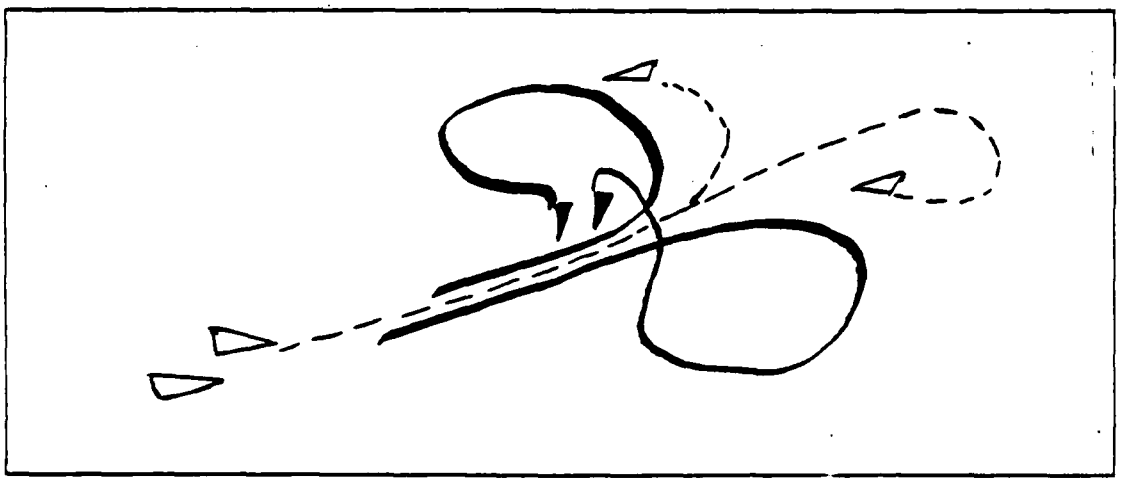

Figure 5.3 Dual Combat Turns.

This is certainly not an exhaustive listing of the counter-offensive maneuvers, but gives the general tone and flavor of the training program. It is estimated that the current training program would approximate this very

closely. The rhetoric about independent wingmen with their own initiative requires a program such as this to begin to move in that direction. Also, the Soviets habitually use past programs from WWII, modified, to suit their current needs; articles are full of combat engagements used to illustrate a point.

Air-to-air combat training is moving toward redeveloping initiative, but falls short of US concepts of initiative and free maneuvering. Soviet training does not appear to allow for maneuvering beyond the first counter-offensive move once attacked. The assumption appears to be that the counter-offensive maneuver will always work; perhaps because it is a 'scientific' solution. US training is known for maneuver-counter maneuver with each pilot continuing to try and 'get a shot' on his opponent [Ref. 170]. Also, in Soviet training the attackers (or target aircraft in training) rarely split--another example of the wingman being welded to the lead--to attack both aircraft in the pair. Nor do the attackers make any attempt to counter the counter-offensive maneuver. Again, the outcome seems to be already decided by the first maneuver. Hindering the movement of the wingman cuts the potential for creative tactical thinking and initiative in half and thus, reduces the combat potential.

There is no evidence that the Soviets have chosen a radically new approach to training their wingmen in initiative. There are, however, signs that a squadron of specially trained 'adversaries' may have been formed to inject realism into combat training. Pilots of this squadron would supposedly act as top instructors by performing combat maneuvers near perfection. [Ref. 164: p. 93] Pilots fighting against these 'aggressors' of sorts may get dissimilar air-to-air combat training(DAACT), that is a Flogger fighting against a Fishbed. If the training

squadron flies Floggers and a Fishbed unit flys against them for training, or, if the special training squadron receives the new Mig 29 Fulcrum or Su-27 Flanker before other units, then DAACT is very possible. This would expose pilots to a wider variety of adversaries instead of constantly flying against members of the same regiment. However, it would probably not alter significantly the training for initiative. The basic 'tried and true' of the past will most likely continue.

3. GCI Control vs Independent Search

If the Soviets return to training for initiative and independent actions, technology and GCI control have to be integrated with the initiative of missions such as independent search or freehunt. In current writings, free hunt type missions similar to those of WWII and the 50's and 60's are receiving emphasis under the title independent search. In most air-to-air missions, pilots are vectored to their target by the GCI.[19] As discussed in the previous chapter, through the 60's and 70's GCI control had a direct negative impact on pilots' initiative. Many pilots flew mechanically as they obediently followed the GCI commands without much tactical thought.[20] However, during a free hunt or independent search mission, a pilot is given a geographic region to search and destroy targets without the help of GCI controllers. He must make his own tactical decisions on his own initiative.

New aircraft such as the Flanker which may soon be operational are reported to have improved doppler radars similar in capability to the US F-15's. This radar could

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[19]For an example of this in current training see Zhilin, A. Capt, "Why the Intercept Failed," AK No. 3 1984. (FBIS 20 June 84) pp. 15-16.

[20]The assertions here are taken from the criticism by those who supported initiative against the rigid training system that developed with increased GCI control found while researching the content analysis.

allow improved independent search capabilities over the Mig 23's High Lark radar. For example, it is estimated that the Flanker's radar can track while scanning [Ref. 172: p. 75]. Thus, pilots would have a much bigger picture of the air situation. They could decide on their own which targets are the most threatening and engage them while searching for new targets. There would be far less need for a GCI controller to lead the pilot to a fight. The new technology could allow the greatest initiative yet. Flight leads could become small battle managers by allocating their wingmen to the incoming threats picked-up by their radar. Leads would have to be trained in decision making and wingmen would be forced to fly autonomously once given their target assignment.

However, at the same time new fighters were being developed, the Soviets have been developing an improved airborne warning and control system (AWACS) [Ref. 173]. The Mainstay AWACS is larger that the current Moss AWACs. The increased size of the aircraft allows for more computer processing power and may give the Mainstay the necessary capabilities to be used in Central Europe against NATO. The introduction of an airborne control platform could increase their radar coverage and alleviate the need for independent search missions. Independent search missions have traditionally been in places where there are gaps in radar coverage; but, any ground radar gaps could be filled by the AWACs. Thus, the outlook for independent search missions could be similar to that of the Free Hunt missions 24 years ago. Just as the speed of jets, ground radar, and GCI stifled the independence of intercept pilots, new technology with the airborne radar may slow the development of independent search missions and, given enough time, may eliminate them. As shown by the content analysis in the previous chapter, emphasis on initiative declined sharply in 1983 and

84. This could be an indication of a shift in tactical thought because of the operational deployment of the Mainstay and a drop in training in independent search. Although this is speculation, it would be interesting to track the deployment of the new AWACs and match it to a continuation of the content analysis to see if there is a correlation.

B. GROUND ATTACK TACTICS

One final area in current tactics before discussing the influence of Afghanistan on initiative is the emphasis placed in preplanning of ground attack missions. Since the mid 1960's, Soviet doctrine accepted the possibility of a conventional phase at the outset of a war in Europe [Ref. 174]. Since then the doctrine moved further toward the importance of a decisive conventional victory which would negate NATO's theater nuclear capability before it could be used. The Air Force's role in accomplishing this mission is through the execution of the independent air operation. This air operation would include over a thousand aircraft penetrating through small corridors punched in NATO's air defenses.[21] [Ref. 174: pp. 44,46] In order for these aircraft to reach their targets, return home, and deconflict the mass of other aircraft in the air, the operation requires extreme preplanning of launch times, ingress and egress routes, safe altitudes to fly through their own air defense, attack tactics, times over targets, etc.

Daily training to prepare for this operation most likely entails preplanning and control measures to ensure compliance with the plan. This in turn would hinder the development of initiative among the ground attack pilots involved.

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[21]For a detailed discussion on the air operation, see Petersen, Phillip A. and Major John R. Clark, "Soviet Air and Antiair Operations," Air University Review March-April 1985, pp. 36-54. and Petersen Soviet Air Power and the Pursuit of New Military Options, Studies in Communist Affairs, Wash DC, GPO, 1979.

Although there may be an increased emphasis on planning in ground attack, the tactics do not appear to have changed dramatically over the last two decades. Maneuvers used in WWII and refined during the 1950's and 1960's appear to be the standard today.[22] All maneuvers are 'scientifically' computed in terms of G-loading, timing, angle of attack, etc. The most common maneuver is the combat turn. When abeam the target the attackers fly beyond it for 10-12 seconds. They then pitch up in a climbing 3-4 G turn, acquire the target and release ordnance. [Ref. 175] (See Figure 5.4)

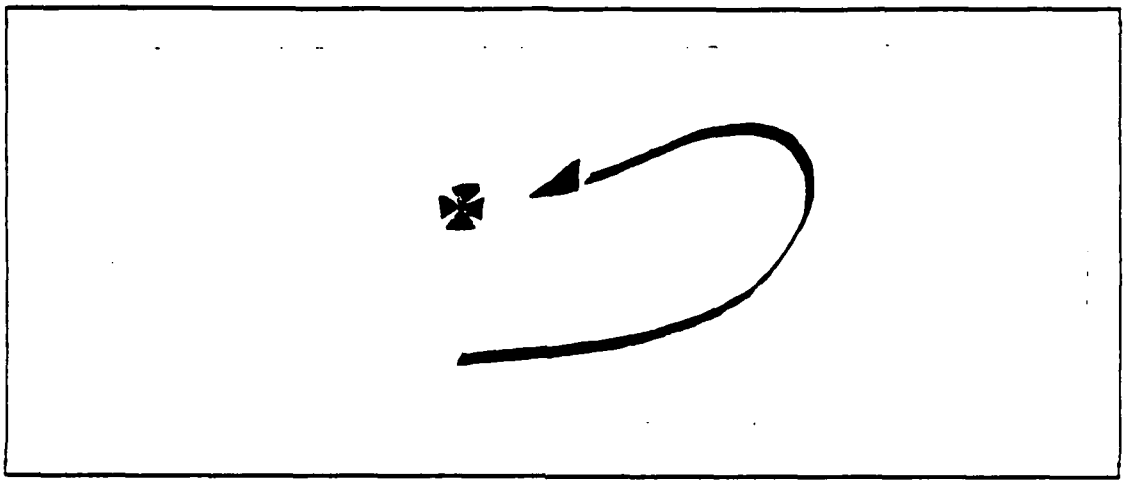

Figure 5.4 Ground Attack Combat Turn.

A similar maneuver is the half-loop in which the target is passed and the turning back for the attack is done more in the vertical than in the horizontal plane of the combat turn. [Ref. 176] (See Figure 5.5)

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[22]Current articles on ground attack tactics do not describe in full detail the tactics used as did issues in the 1960's. However, the bits and pieces of tactics presented, when put together, closely resemble previous tactics.

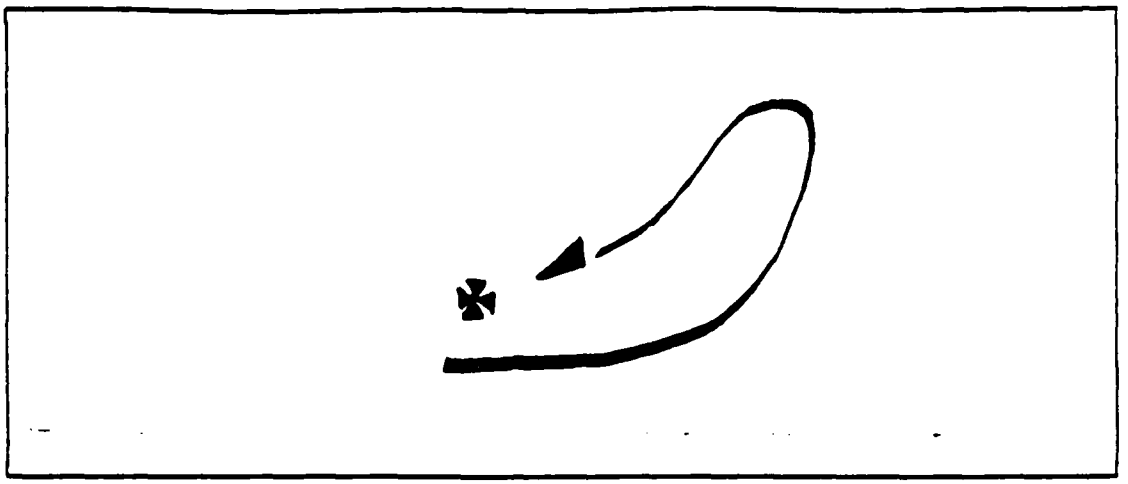

Figure 5.5 Half Loop Attack.

Selection of the maneuver can be preplanned, or the decision can be made while attacking should weather change or terrain be a factor that was unknown prior to the mission. Some of the preplanning involved includes routes and maneuvers for reattacks of a target. These are drawn out in elaborate detail to include angle of bank, timing, and other safety factors. [Ref. 177: p. 14] In training the Soviets currently link success with good exhaustive preplanning, ". . . success was planned and orderly, well thought through preparation . . . ." [Ref. 178: p. 13] To ensure the proper execution of the plan and safety, ground attack missions are controlled by range safety officers during routine training at bombing ranges and by forward air controllers(FAC) during exercises. At a bombing range, pilots must ask permission for each bombing run made. [Ref. 179: p. 31] During tactical exercises aircraft remain in contact with FACs to receive course corrections and targeting information [Ref. 178: p.12]. With the Soviets' extreme concern for safety it would be plausible for the FACs to act as a controlling authority for safety and deconfliction in a similar fashion to range controllers. Pilots may have to

receive clearance as well as targeting information from the FACs to make an attack run even during exercises.

The use of initiative during planned exercise missions appears to minimal. Wingmen wait for the leader's commands before taking action: "Maneuver! barked Captain Pereva's voice over the radio, his first command since the flight had taken off. He and his wingmen swept toward the target." [Ref. 178: p. 12] Even during scenarios which are dynamic, in that the targets move just prior to takeoff of attacking aircraft, planning attempts to remove any need for in-flight initiative. For example, in one exercise described, an order for an attack comes to the squadron and a plan is made: "they quickly computed the route and checked calculations--everyone had it down precisely, with no discrepancies." Then as the weather was "constantly changing" to make matters worse, new targeting information came in just before the aircraft were ready to launch. But, "the scenario did not catch them napping . . . they again preceded to make calculations." [Ref. 180: pp. 8,9] It is interesting that the authors chose not to describe a target change while the aircraft were in flight. This would have required real initiative and individual creativity by those aloft as was performed during WWII. (See Chapter III, B.4) The Soviets mention in passing these qualities as necessary; however, they do not seem to put a significant emphasis on developing them as is being done with air intercept pilots. Instead the emphasis is on preplanning most likely because of the predominance of the Air Operation.

However, one area in which initiative would still be required for the air operation is the destruction of mobile nuclear weapons such as the Pershing Missile and Ground Launched Cruise Missile. Since their exact location could be difficult to gain through intelligence, a group of pilots would need to be trained in free hunt tactics to locate and

destroy these nuclear missiles. Without their destruction, the success of a conventional kill on NATO's nuclear capability would be impossible. Therefore, it is highly probable that the Soviets do and will continue to conduct independent search training for their fighter-bombers. This could involve a certain amount of individual initiative (although this is not emphasized in the open press articles) in the pilots who must decide the best tactics to destroy the target once it is spotted. On the other hand, all the tactics, ingress altitude, search area, etc could be preplanned and dictated to the pilots flying the mission. If this were the case and initiative were taken out of the pilot's hands, then it could prove a vulnerability for the Soviets.

If all the ground attack free hunt missions were preplanned and allowed no room for a changing situation, the intelligence, deception and camouflage could hinder Soviet operations. Intelligence could determine what tactics are being used and help design counter measures. Western deception and camouflage could be tailored to the given Soviet tactics and flight profiles.

To this point, the current situation has been discussed in the European context. On the whole, technology has been a deterrent to the development of initiative. Radars, radios and GCI control in the past and now, the Mainstay AWAC's may bring control over their newest advances in fighter technology - which are most capable of independent operations. In addition, the air operation's increasing sophistication and size demands detailed preplanning which has affected the initiative allowed in ground attack training. What happens when technology and preplanning cannot be readily applied to a tactical situation? The next section discusses the necessity of initiative in Afghanistan operations where European warplans did not readily apply.

VI. INITIATIVE IN AFGHANISTAN

Soviet pilots flew in Afghanistan 64 years ago when helping the Afghanis fight a civil war against the British. [Ref. 181] Today, just as then, the Soviets are finding the flying uniquely challenging and requiring initiative for success; although they are finding ways to overcome this 'problem' with new ways of implementing control.

The invasion into Afghanistan, December 25, 1979, resembled the well planned Czechoslovakian invasion in 1968 with its surprise airborne landings around the capitol and fast moving ground forces along strategic routes in order to gain the initiative [Ref. 182]. The invasion represented the preplanning mentality necessary for large scale operations in Europe. The size of the Afghanistan operation is indicated by the number of transports involved, 280, nearly 38 percent of the Soviet's military transport capability [Ref. 183: p.32]. Also, the "first two weeks of the invasion were an enviable demonstration of top level C3 and coordination." [Ref. 183: p. 40.] Command and Control was directed via satellite from Moscow. However, shortly after the invasion, the Soviets came to realize the difference between Afghanistan and Europe. Plans and tactics 'scientifically' designed for Europe did not fit the Afghanistan environment. The Soviets were challenged in Afghanistan by Guerrilla warfare, lack of in-place technology and extensive command and control, and the mountainous terrain.

Rather than the Afghanis succumbing to the onslaught of the Soviet military as occured in Hungary in 1956 and Czechoslovakia in 1968, the Soviets became involved in guerrilla warfare. Troops trained for massive European war were now involved in a limited war. Evidence of the Soviets' growing awareness of the nature of Afghanistan war was the

gradual increase in the number of helicopters used in combat. The Mi-24 HIND and Mi-8 HIP helicopters are well suited for mobile guerrilla warfare; being flexible in choosing landing sites; their quick response time; and ability to insert troops and simultaneously provide fire support- much like the US helicopters during Vietnam. In January 1980 there were only 15-20 helicopters in Afghanistan. This grew to 45-60 by June 1980 for their Spring Offensive. By July there were 175-200 helicopters and finally the number peaked in September of 1980 at 250-300 helicopters. [Ref. 184: p. 1105] The Soviets shifted their forces relative to the conflict over the period of nine months. What also required modification was their command and control procedures; for Afghanistan was a "situation which required an independent, decentralized style of command somewhat alien to the Soviet experience." [Ref. 185: p. 9]

Afghanistan challenged Soviet command and control procedures because a wide spread C2 network was not already in-place, as has been developed in Europe. Following the invasion, Afghanistan was divided into seven military districts. Because of "field command delays and the rigidity of the Soviet communications channels, it appears that each district commander has been given more than usual latitude to meet combat needs of his area." [Ref. 183: p. 40] The lack of land line communications and radio relays causes delays and forced some autonomous operations. Yet, there is evidence that the Soviets were reluctant to decentralize too much of the decision making to speed up reaction times of close air support. For example, to receive an air strike an infantry officer had to go through the division command post, then over to the Air Force command post; rather than making his request direct to the Air Force unit responsible for that geographic region. These time delays

have caused confusion in guerrilla warfare and this in turn has led to the Soviets striking their own troops accidently with their aircraft. [Ref. 183: p. 41] The problem of command and control was compounded by the lack of ground Forward Air Controllers (FACs). The mountain terrain made it difficult for ground radio to control aircraft coming in for a strike when they are on the other side of a ridge. Also, the mountains made it difficult to place radio navigation units or beacons to help the aircraft find their way to and from targets [Ref. 186: pp. 17-19]. Thus, because of the mountains, the nature of their command and control set-up and lack of an extensive C2 structure, plus the nature of guerrilla warfare, the Soviets found themselves in a situation which required individual initiative.

The Soviets began meeting the challenge of Afghanistan with a combination of planning, initiative and new tactics. They discussed ideas about the Afghanistan situation in the open press in articles on "Mountain Flying" or "Mountain Training."[23] In one such article, Col Protasov stated that mountains require more planning and initiative [Ref. 187: pp. 25,26]. Other articles described mountain flying as requiring "the ability to think clearly and to precisely implement decisions." [Ref. 188: p. 62] The articles stated that beyond the normal radio control of a command post which pilots are used to flying under, they must be able to think and act on their own; and, that is the essence of individual initiative. Afghanistan took the pilot into a combat environment full of unknowns for which complete plans cannot be made.

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[23]According to Maj J. Collins, USA articles with similar titles relate to ground forces tactics and training in Afghanistan and there was a dramatic increase in the number of these articles being published following the invasion. "Soviet Military Performance in Afghanistan; A Preliminary Assessment," working draft 1982 US Military Academy.

At times, pilots had to choose landing sites, modify tactics, choose which targets to attack, etc. independently.

Afghanistan, then caused a change in the thinking patterns of some of their pilots, at least the ones receiving the initial combat experience. This is true of both fixed wing and helicopter pilots and is seen in their approach to flying and some innovative tactics. For example, single pairs of aircraft are being used for freedom and ease of control in the mountain flying. This allows the wingman to operate somewhat autonomously. [Ref. 189: p. 13] Also, the pairs allow wing and lead to support each other:

> why do they fly in two's? It is the only way. Flights in mountains, at a great altitude are far from safe and radio contact is only by line of sight. Here mutual help of the crews determines everything . . . . [Ref. 190]

On occasions, such as trying to destroy a rebel ammunition location in the mountains, pilots have to think up new tactics or approaches during the flight in order to be successful [Ref. 189: p. 15].

Normally, during training in Europe, helicopters and fighter-bombers performing close air support are controlled by FACs who give the pilots target identification, location, attack headings, etc.[24] The Soviets have continued to emphasize the importance of FACs to keep crews informed even in mountain flying [Ref. 187: p. 26]. However, as mentioned, the mountains can cause problems with communications between aircraft and a controller on the ground. To solve this problem, they have begun using airborne scouts. [Ref. 191] A HIND or HIP normally flys above and ahead of the attack helicopters. The situation may look like Figure 6.1 .

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[24] See chapter V, part B for a discussion on ground attack training with FACs.

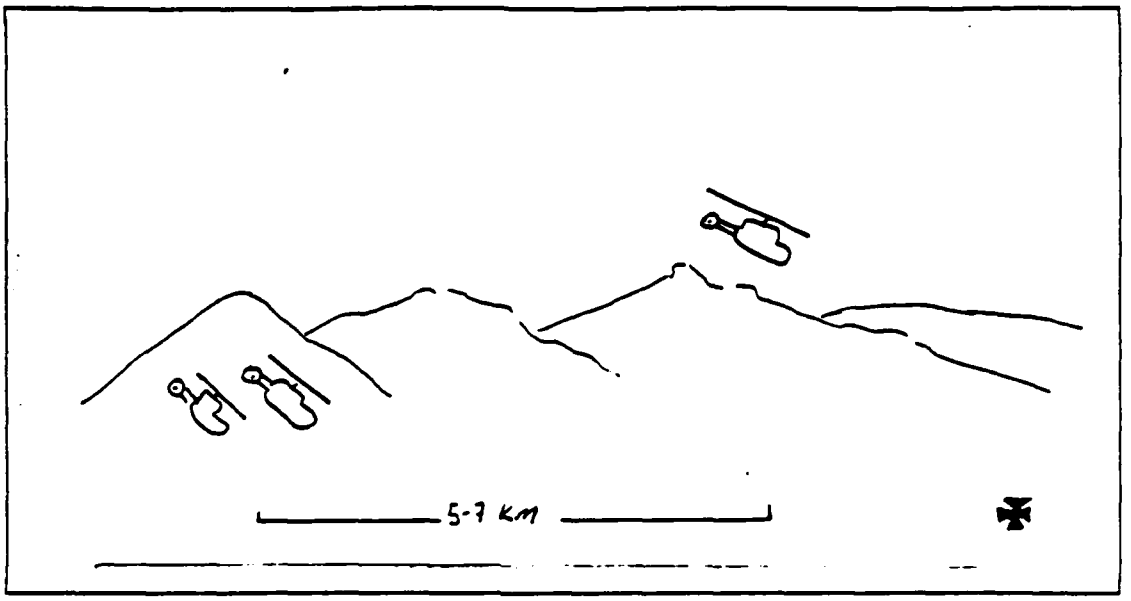

Figure 6.1 Airborne FAC.

If the HIND are begining their attack run from 7-8km at low altitude and popping up to 300m for a diving attack as being reported [Ref. 191: p. 683] then, the scout helicopter must be at least 5-7km ahead of the attackers to have enough time for target acquisition and relaying the information to the attackers. The scout may be calling the pop-up to the attacking aircraft if they are so low that they cannot see the target prior to the climb. The use of an airborne FAC in this way in Europe has not been reported in open sources. It may be unique to Afghanistan. Having an airborne controller reduces the amount of initiative required by the attacking helicopters. Although the group of three helicopters operates autonomously, the controller may be unit commander or high ranking pilot. If this is the case, it appears as though the Soviets' innovation may in fact limit the amount of creativity or initiative learned by the attacking pilots.

Other innovations in tactics include having a HIND fly high as a decoy to draw fire for the attackers to use for

spotting the rebels. Also, Mi-4 HOUND have been spotted dropping flares above attacking helicopters to decoy any SA-7 Surface-to-Air missiles launched at the helicopters [Ref. 183: p. 36]. However, despite these innovations which are results of creative ideas, planning is still given top priority in order to take away as much uncertainty and any need for creativity during combat. For example,

> prior to take off we calculate ahead of time the radii of the turns, required bank angles, and the points for going into a bank. This gives the navigator the opportunity to issue timely commands to the pilot concerning the approach to the turning point, entry into a bank, and direction of the turn, which reduces significantly the psychological tension when flying along a canyon.[25] [Ref. 186: p. 18]

Thus, given enough time, the Soviets' preplanning and control appears to be invading the school grounds of initiative that was Afghanistan. At the outset of anti-guerrilla operations pilots were in an environment which necessitated the use of initiative and writers in Soviet press encouraged this development. As the Soviets have become entrenched in Afghanistan, they have developed new tactics which have facilitated control. So, where there was once freedom and uncertainty, there will now be a controller to tell the pilots what to do. In addition, to deal with mountainous terrain, preplanning of even the angle of bank and where to turn is being performed to take the 'load-off' the pilots.

It cannot be said that pilots are not gaining in experience and some initiative in choosing targets and flying in the mountains against rebels. New tactics and innovations are being adapted. However, unlike the WWII experience, it does not appear as though a vast number of pilots will come

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[25]This thesis does not imply that some preplanning is not important and absolutely necessary. However, in this case as in much of what has been described in this thesis concerning Soviet planning, it appears excessive and at the expense of individual initiative and risk taking.

from Afghanistan realizing the importance of initiative. Also, because the Soviets have unchallenged air superiority in Afghanistan, their tactics do not have to consider hostile aircraft and helicopters. Therefore, the airborne FACs and other new approaches may not be applicable to a war in Europe. It is too strong to say the Soviets have not shown initiative among their pilots - for certainly many have and this initiative among some may return to Europe and increase their fighting capability. However, it may be more accurate to say that the Soviets' frustrations in the mountains against rebels due to poor communications and C2 in general may give the Soviet leadership a greater appreciation for their well developed, centralized, tight C2 system in European USSR and the Warsaw Pact. This may convince them to increase their efforts toward more and more inhibiting control and further constrict initiative in the long run. Afghanistan may be an opportunity (for developing initiative) lost.

VII. CONCLUSION

Initiative in the Soviet Air Force is nothing new; it can be traced even to the earliest days of the Red Air Force. During WWII fighter pilots had to rekindle the initiative that had been purged out of the Air Force by Stalin. By the end of the war, there was little difference between the free flowing fighters in the East and those of the West in terms of initiative. The Soviets realize the value and importance of initiative; and the Soviet Air Force has demonstrated the capability to develop initiative. However, the Socialist system and a penchant for collectivism has slowly suppressed initiative to the point of near extinction. Only through the efforts of WWII veterans and "social deviants" and the environment in Afghanistan has initiative stayed alive in fighter tactics.

Figure 7.1 shows the trends of initiative from before World War II to the 1980's. The values prior to the content analysis data (1957) are subjective estimates based upon the tactics, doctrine and writings of that period. The purge by Stalin put the Red Air Force under strict command and control guidelines with little room for initiative. Not until 1942 did the Soviet fighters begin to loosen up their tactics and develop pilots with individuality, creativity, and decisive initiative. By the end of the war, Soviet fighters out performed or at least matched western fighters with their tactics and initiative.

In 1948 The Soviet Air Force transitioned into jet aircraft as the MiG-15 Fagot was deployed to its units. New speeds began pulling tactics away from WWII type dogfights and initiative. Also, postwar bureaucracy led to cautious, safety minded tactics. Commanders could not afford to loose costly jets on the grounds of 'realistic' training; the new

war was economic. The freedom of being able to fly whatever tactics necessary to survive against the Germans no longer applied. Although initiative was fairly strong just a decade following the war, comments in 1957 show a distinctive drop from the level of freedom and initiative at the end of the war. Jets and peacetime greatly influenced initiative; but, the Soviet Air Force was still filled with combat veterans who knew what it was like during the war. They were the ones who spoke-out and fought for initiative.

The resurgence and increase of emphasis on initiative, after a postwar decline in emphasis through the 1960's, has gained ground slowly. Since the 1970's, Soviet tactics have gradually been returning to ones which allow for individual decision making . In 1978, there was a marked increase in the discussions on initiative. However, current trends in Soviet tactics suggest that the Soviet Air Force at best is returning to the freedom of tactics and initiative it experienced during the 1950's. They are not on the verge of overcoming years of momentum against initiative. This is evidenced by their experience in Afghanistan.

At the outset of the Afghanistan conflict, the leadership called for initiative among its pilots when control over them was not possible. New tactics developed and initiative was employed. However, other new tactics with airborne controllers is a step towards placing control back on top of the pilots and holding their freedom for initiative in check. And, correspondingly, writings changed from emphasizing initiative to stressing preplanning. Afghanistan offered the best opportunity since WWII to develop initiative in their fighters; but, appears to be an opportunity lost as leadership again tried to removed any need or occasion for initiative.

The Soviet Air Force is replete with tight control measures which hinder spontaneous actions on their pilots' part.

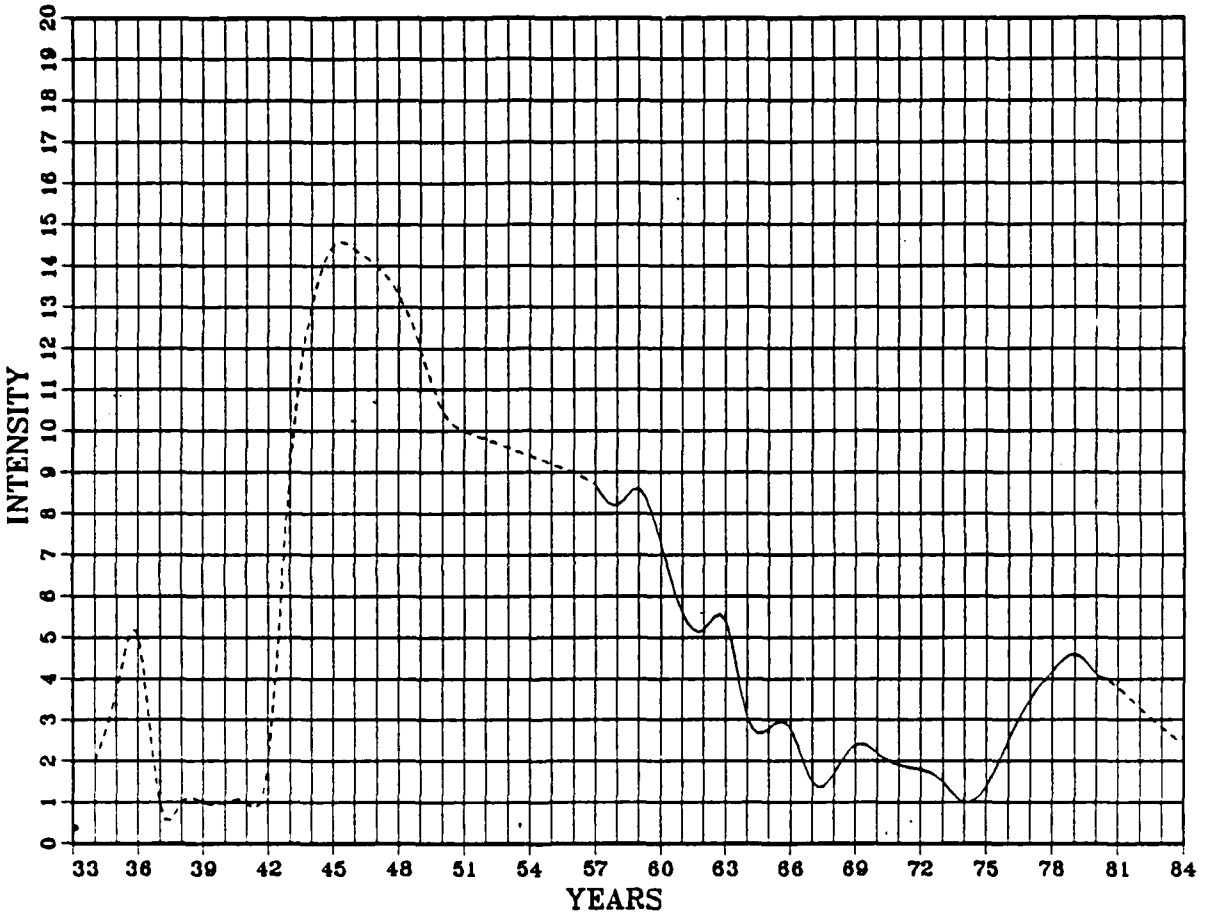

Figure 7.1 SAF Initiative 1934-1984.

Reprimands are given for the slightest deviations from their planned training flights; making it extremely risky business to experiment outside the control of authorities. There is strong momentum towards preplanning, centralized control, and scientific solutions stemming from the successes of WWII air operations. Competing for influence against over control are those fighter pilots who experienced WWII and saw the absolute need for initiative in battle. As these fighter commanders age and dwindle in number, support for initiative will most likely diminish to the point where a long enough period of peace could ensure the near complete loss of initiative. Concern for simply 'making it' in the system leads to an over emphasis on safety to keep the training reports looking good for superiors at the expense of realism in their training and could also help put the flame of individual initiative out. This was evident during the 60's and 70's when initiative was at its lowest point and veterans were complaining that unrealistic training was making Soviet fighters easy prey for any well-trained adversary. In 5-10 years there may not be anyone left to complain.

This does not mean the Soviet Air Force is a weak opponent. The suppression of initiative does not erase the thousands of aircraft opposite NATO. Nor, has the potential for initiative among Soviet pilots been removed. There is an apparent innate human response to develop initiative when survival is threatened severely. During WWII it took the Soviets nearly two years for initiative to become widespread. This amount of time was allowed only because Soviet production capability was not destroyed by the German Blitzkrieg. In a modern conflict it is impossible to say whether or not the Soviets would have the luxury of time for the development of initiative--and this may be a significant vulnerability. On the other hand, the Soviet pilots today

are much better educated and informed than the pilots of mostly peasant background during WWII. This could facilitate a more rapid development of initiative if the Soviets were to suffer heavy losses during a war.

In conclusion, the Soviet fighter pilots today have a history of initiative and tight control. They are not complete robots incapable of individual decisions though their training today is more restrictive than western training. Soviet fighter ground attack tactics appear to have remained virtually the same since the 1950's and 60's. There appears little room for initiative in daily training, although there are some meager efforts at teaching initiative to subordinates. Unexpected camouflage, concealment or deception could have a greater effect than realized if their pilots do not exercise initiative when attacking targets.

In air engagements, during a one versus one dogfight, if jamming eliminates any GCI control, then Soviet pilots will most likely be vulnerable. Their training in named maneuvers, unrealistic combat situations, stereotyped range training which the Soviets themselves criticize will handicap their pilots. This is not to say they are bad pilots; in fact, they will probably execute their planned and memorized tactics expertly; however, the average Soviet pilot will most likely have great difficulty in making independent decisions and using initiative at first.

The freedom of the wingman is an indicator of initiative in tactics and decision making. Since WWII the West has held the maneuvering of a wingman as essential to tactical success. US fighters routinely separate wingmen from the lead for mutual support and individual engagements. Soviet pilots, however, have vacillated between a wingman being welded to his lead and the freedom of action talked about in the WWII tactics. Current tactics are an attempt to move back toward a free maneuvering wingman; however, they have a

good distance yet to go. In training, for now,(at least as discussed in the open press) the Soviets are not living up to the full potential of fighter initiative of their past or of US standards. However, it must be kept in mind that they have clearly demonstrated the potential for developing initiative and creative flying. The articles railing against 'wild pilots' who do not follow safety rules are indicative of free thinkers existing now among the Soviet pilots. Others, could soon follow in their path if their survival depends upon it or they are given the freedom to do so.

APPENDIX A

SCIENTIFIC METHODOLOGY

The proposed formula by Kudryashov and Nikitin was:

$$N = CWKNF$$

where

N = anticipated number of destroyed enemy aircraft

C = Degree of fighter's superiority over the enemy

W = Probability of hitting the enemy aircraft with fire of one fighter

KNF = Number fighters operational

Col V. Ya Kudryashov and Lt Col P.A. Nikitin, "The Combat Capabilities of Fighters and a Method for Determining Them", Herald of The Air Fleet, No. 8, 1957.

APPENDIX B

AIR OPERATIONS SCHEDULE

From the Schedule of the Massed Raid

No	Unit	a	b	Time of Raid	Cover Unit	a	b
	241st			First Wave**			
1	Bomber AirDiv, III Bmbr Air Cps	4	18	"h" to "h"+0.15	VI Fighter Air Corps	4	6
	2d GDS Attack Air Div	5	8-10	"h" to "h"+0.15	283d Ftr Air	5	4
2	301st Bbr Air Div, III Corps	4	18	"h"+.10 to +.15	VI Fighter Air Corps	4	6
	229th Grd Atk Air Div	5	8-10	"h"+.15 to +.30	286th Fighter Air Division	5	4
3	221 Bmbr Air Div, VI Mixed Air Corps	5	9	"h"+.30 to +.45	282nd Ftr Air Div, VI Mixed Air Corps	5	6
	229th Grd Atk Air Div	4	8-10	"h"+.30 to +.45	286th Fighter Air Division	4	4

**Analogous planning was done for the second,

third and fourth waves.

Key: a--Number of groups

b--Number of aircraft in groups

Commander 16th Air Army, Lt Gen Avn Rudenko

Chief of Staff of 16th Air Army, Maj Gen Avn Brayko

TsAMO, folio 368, inv. 21584, file 2, sheets 64, 65, 66, 67.

APPENDIX C

CONTENT ANALYSIS DATA

1957

Issue	No. of articles	Hits
1	5	5
2	3	1
3	4	1
4	4	1
5	4	7
6	4	3
7	3	2
8	3	2
9	4	9
10	3	4
11	3	3
12	5	0
	42	39

1958

Issue	No. of Articles	Hits
1	3	5
2	4	8
3	6	6
4	6	4
5	6	12
6	4	28
7	6	12
8	4	17
9	4	6
10	3	1
11	4	11
12	3	5
	55	115

1959

Issue	No. of Articles	Hits
1	5	4
2	5	11
3	5	4
4	5	4
5	4	3
6	6	11
7	6	10
8	6	6
9	5	13
10	5	32
11	9	6
12	6	13
	67	116

1960

Issue	No. of Articles	Hits
1	5	7
2	8	8
3	6	2
4	7	4
5	6	4
6	6	7
7	5	45
8	9	9
9	2	1
10	7	3
11	5	7
12	4	3
	70	103

1961

Issue	No. of Articles	Hits
1	9	3
2	5	2
3	7	19
4	0	0
5	5	6
6	3	0
7	4	0
8	10	8
9	2	3
10	4	2
11	6	12
12	7	12
	62	67

1962

Issue	No. of Articles	Hits
1	5	1
2	5	1
3	3	1
4	1	0
5	1	0
6	3	0
7	1	0
8	4	8
9	0	0
10	1	0
11	1	0
12	3	0
	27	11

1963

Issue	No. of Articles	Hits
1	4	25
2	3	7
3	3	0
4	4	31
5	4	5
6	6	18
7	3	2
8	3	1
9	5	15
10	3	3
11	4	3
12	5	20
	47	130

1964

Issue	No. of Articles	Hits
1	5	8
2	4	0
3	3	3
4	3	2
5	3	0
6	9	1
7	5	3
8	7	5
9	7	11
10	3	3
11	2	3
12	4	12
	55	51

1965

Issue	No. of Articles	Hits
1	5	2
2	2	4
3	2	1
4	4	3
5	4	2
6	4	5
7	5	0
8	3	0
9	3	2
10	5	4
11	3	1
12	4	0
	44	24

1966

Issue	No. of Articles	Hits
1	3	1
2	6	1
3	5	2
4	6	5
5	4	3
6	5	4
7	3	5
8	5	5
9	4	5
10	4	1
11	(not available)	
12	(not available)	
	45	32

37 = adjusted total

1967

Issue	No. of Articles	Hits
1	(not available)	
2	(not available)	
3	(not available)	
4	7	3
5	3	5
6	9	5
7	2	3
8	1	1
9	5	3
10	3	1
11	4	1
12	5	0
	39	22

27 = adjusted total

1968

Issue	No. of Articles	Hits
1	3	2
2	4	0
3	4	0
4	4	3
5	2	3
6	3	2
7	4	3
8	2	0
9	(not available)	
10	3	1
11	(not available)	
12	(not available)	
	29	14
		18 = adjusted total

1969, 1970 (not available)

1971

Issue	No. of Articles	Hits
1	2	0
2	3	2
3	1	0
4	(not available)	
5	(not available)	
6	(not available)	
7	(not available)	
8	(not available)	
9	1	0
10	4	0
11	5	0
12	1	0
	17	2
		4 = adjusted total

1972

Issue	No. of Articles	Hits
1	2	11
2	4	3
3	(not available)	
4	1	1
5	(not available)	
6	(not available)	
7	(not available)	
8	(not available)	
9	(not available)	
10	(not available)	
11	3	0
12	(not available)	
	10	15

25 = adjusted total

1973

Issue	No. of Articles	Hits
1	(not available)	
2	(not available)	
3	2	3
4	1	0
5	3	2
6	(not available)	
7	2	0
8	4	20
9	2	1
10	4	2
11	1	1
12	2	1
	21	30

38 = adjusted total

1974

Issue	No. of Articles	Hits
1	(not available)	
2	3	1
3	2	2
4	3	0
5	(not available)	
6	(not available)	
7	(not available)	
8	1	0
9	2	0
10	1	0
11	(not available)	
12	2	7
	14	10

19 = adjusted total

1975

Issue	No. of Articles	Hits
1	1	0
2	2	3
3	(not available)	
4	(not available)	
5	(not available)	
6	3	0
7	1	1
8	(not available)	
9	3	0
10	0	0
11	(not available)	
12	2	0
	12	4

7 = adjusted total

1976

Issue	No. of Articles	Hits
1	(not available)	
2	2	0
3	(not available)	
4	2	1
5	2	0
6	(not available)	
7	(not available)	
8	(not available)	
9	(not available)	
10	1	0
11	2	0
12	3	1
	12	2

4 = adjusted total

1977

Issue	No. of Articles	Hits
1	3	1
2	(not available)	
3	3	2
4	1	3
5	4	0
6	2	0
7	2	2
8	1	0
9	2	0
10	1	0
11	2	4
12	1	4
	22	16

17 = adjusted total

1978

Issue	No. of Articles	Hits
1	(not available)	
2	(not available)	
3	(not available)	
4	(not available)	
5	1	0
6	2	0
7	(not available)	
8	1	1
9	(not available)	
10	1	0
11	2	2
12	(not available)	
	7	3

7 = adjusted total

1979

Issue	No. of Articles	Hits
1	(not available)	
2	5	12
3	4	2
4	1	0
5	0	0
6	3	16
7	3	1
8	(not available)	
9	(not available)	
10	0	0
11	(not available)	
12	5	11
	21	33

44 = adjusted total

1980

Issue	No. of Articles	Hits
1	5	1
2	3	0
3	7	1
4	3	3
5	3	2
6	5	1
7	4	11
8	5	11
9	6	11
10	0	0
11	8	8
12 (not available)		
	49	47

52 = adjusted total

1981

Issue	No. of Articles	Hits
1	1	1
2	0	0
3	5	16
4	5	5
5	3	1
6 (not available)		
7	3	5
8 (not available)		
9	3	5
10	3	4
11	4	2
12	2	3
	29	47

55 = adjusted total

1982

Issue	No. of Articles	Hits
1	3	2
2	5	13
3	3	2
4	2	0
5	5	3
6	5	11
7	5	4
8	5	7
9	4	3
10	(not available)	
11	(not available)	
12	(not available)	
	36	45

56 = adjusted total

1983

Issue	No. of Articles	Hits
1	4	5
2	3	3
3	(not available)	
4	2	1
5	4	3
6	4	1
7	3	0
8	9	1
9	7	2
10	(not available)	
11	6	4
12	8	3
	50	23

25 = adjusted total

1984

Issue	No. of Articles	Hits
1	5	3
2	(not available)	
3	5	1
4	(not available)	
5	(not available)	
6	4	0
7	(not available)	
8	(not available)	
9	4	1
10	(not available)	
11	6	3
12	3	1
	27	9

18 = adjusted total

When issues were not available, the total was adjusted with the average weight of the available issues. For example, if 3 of 12 issues were not available, one fourth of the total was added to calculate the adjusted totals. It is assumed that the emphasis on initiative is on the average evenly distributed through the year. This was taken to be the most equitable manner to compensate for the missing data and hopefully does not greatly over or under represent the emphasis on initiative.

The five year averages are a sliding five year average. For example, data from 1957-1961 were averaged for the first plot. The next plot was taken from 1958-1962 and so on progressing one year at a time until 1980.

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