SECRET NOFORN

This document consists of 23 pages
No. 4 of 5 Copies; Series
SAIC/PA DC #: 91.016
COPY # 4

A Long–Term, Integrated, Basic and Applied Research Plan (U) (Draft)

Authors:

Edwin C. May, Ph.D.
Wanda L. W. Luke

10 May 1991

Science Applications International Corporation

An Employee-Owned Company

Presented to:

SG1J

Defense Intelligence Agency
Bolling AFB, Building 6000
Atten: [redacted] DT–5A
Washington, DC 20304–0001

Submitted by:

Science Applications International Corporation
Cognitive Sciences Laboratory
5150 El Camino Real, Suite B–31
Los Altos, CA 94022

c/o Innovative Technology Division
311 Park Place Boulevard, Suite 360
Clearwater, FL 34619

Classified by: RFP No. MDA908–91–R–0133
Declassify on: OADR

SECRET NOFORN

I OBJECTIVE (U)

(S/NF) The objective of this research plan is to suggest a systematic and scientifically rigorous investigation of anomalous mental phenomena. The plan includes an integrated and multidisciplinary approach to both basic and applied research, and combines these with standard HUMINT practices to accomplish the long–term goals for applications in the intelligence community.

II INTRODUCTION (U)

(U) With regard to this research plan, anomalous mental phenomena can be divided into two broad categories:

(1) Anomalous Cognition: A form of information transfer in which all known sensorial perceptions are absent.

(2) Anomalous Perturbation: The perturbation of matter in which all known physical interactions are absent.

Anomalous cognition (AC) includes phenomena that are described in the parapsychological literature as extra–sensory perception (ESP), telepathy, clairvoyance, and precognition, while anomalous perturbation (AP) includes psychokinesis, teleportation, levitation, and materialization.

1. (U) Historical Background

(S/NF) Serious government–funded research of both these domains began in 1973 when the Central Intelligence Agency initiated a modest effort to determine if a genuine phenomenon could be verified and to assess the degree to which it could be applied to general intelligence problems. Through fiscal year 1985, a variety of intelligence agencies from the military services and the Defense Intelligence Agency had supported predominantly application–oriented research programs at SRI International for the intelligence community. Much of that support was minimal and/or sporadic and thus very little systematic research was conducted.[1] While the understanding of anomalous mental phenomena at that time did not allow for reliable operational use, nonetheless, enough had been learned to suggest that intelligence applications were possible and that applied and basic research should be conducted to verify and support potential operational applications.

(S/NF) Beginning in fiscal year 1986, the Army Medical Research and Development Command initiated a coordinated, 5–year, basic research investigation of anomalous mental phenomena at SRI International. This program had three objectives:

(1) Provide incontrovertible evidence for the existence of anomalous cognition and anomalous perturbation.

(2) Determine the physiological, physical, and psychological basis for AC and AP.

(3) Determine the degree to which AC data could be integrated into the intelligence community.

(S/NF) The program was fully funded for the first two years; half funded for the 3rd year; and not funded by the USAMRDC for the 4th and 5th years of their contract. The House Appropriations Committee, however, funded the 4th year (at the same level as the 3rd) through DARPA to the USAMRDC contract. The 5th year of that contract, however, was not funded at all.

(S/NF) Regardless of this uncertain support history, the SRI's Cognitive Sciences Program (CSP) met, or partially met, its objectives.[2-5] An information-transfer anomaly (i.e., anomalous cognition) was found to exists, and it could not be explained by inappropriate protocols, incorrect analyses, or fraud. The CSP was not, however, able to verify the existence of anomalous perturbation.[6,7,8,9]

(U) Significant progress had also been realized in meeting the second objective. Preliminary results suggest that the central nervous system (i.e., the brain) of individuals with known AC ability appear to respond to isolated AC stimuli. These responses are similar to those observed when their eyes are stimulated directly.[10]

(U) In addition, two theoretical models have been constructed. The first one, a heuristic model, systematizes the data of over 600 separate experiments spanning 22 years of research that had been published in the open literature. It suggests a possible physical transfer mechanism for AC data.[11] The second one, a fundamental model, suggests that animals possess an additional sensorial system which is sensitive to "information" directly.*

(S/NF) In addition to these major findings, the CSP realized a number of preliminary secondary findings. They include, but are not limited to:

- Dynamic targets are statistically better than static targets in AC laboratory experiments, in simulated operational activity, and in actual operations.
- Traditional psychological, medical, and behavioral screening methods are not successful at identifying individuals with AC ability; however, surveys indicated that approximately 1% of individuals from unselected populations do possess a robust AC ability.[12]
- A number of empirically based training methods were developed, but the results from these were preliminary.[13,14]
- Anomalous Cognition does not depend upon distance or the time span between a target and an individual with AC ability.[15]

It is beyond the scope of this report to provide a technical review of the 17-year history of SRI's cognitive sciences program in detail; however, complete documentation and technical briefings will be provided upon request. In addition, Appendix H provides a complete list of documents that were produced under that effort.

2. (U) Overview of the Research Plan

(S/NF) This document describes a plan which begins with the results and techniques of the earlier program, and develops new concepts that are integrated into the general research community. In addition, the plan suggests ways in which AC-derrived operational data might be integrated as general HUMINT information into the intelligence community. Because of the complex nature of the research problem, the plan will be interdisciplinary and will involve a number of specific university departments and government laboratories. By necessity, the plan will be long-term; however, a graduated approach that contains significant technical and policy review is outlined in Section III. Second II describes the plan, and supporting technical detail can be found in the appendices.

* (U) Technically, this is referred to as entropy in the thermodynamic literature.

III RESEARCH PLAN (U)

(S/NF) The Cognitive Sciences Program (CSP) at Science Applications International Corporation (SAIC) is currently engaged in applied and basic research in support of potential applications of anomalous mental phenomena for the intelligence community. Starting in February 1991, the CSP has initiated a broad-based research effort to quantify the physics, physiology, psychology, and protocol parameters that will increase the signal strength of anomalous phenomena to the point where it can be easily integrated into existing intelligence methodology.

(U) For the purpose of this section, we define research that is primarily directed at improving the quality of output (e.g., analysis techniques, choice of target material, etc.) as *applied*. Research that is primarily directed at understanding the nature of the phenomena (i.e., signal transmission, neurophysiology, etc.) as *basic*. The applied and basic research domains are broad and contain substantial numbers of items in each category. A block diagram of an overview of these items and a brief definition/description of each can be found in Appendix A. While this potpourri provides insight into the breadth of the research into anomalous mental phenomena, it does not form the basis of an integrated and focused research plan. Rather than a broad overview, in this section we provide a highly focused and detailed research plan.

1. (U) Anomalous Cognition

(U) Given that the earlier program was able to verify the existence of AC and not able verify the existence of AP, the approaches to these domains will be considerably different. In this section we describe the research plan only for AC.

(U) In a typical AC task, we define:

- Receiver—An individual who attempts to perceive and report information about a target.
- Target—An item that is the focus of an AC task (e.g., person, place, thing, event).
- Target Designation—A method by which a specific target, against the backdrop of all other possible targets, is identified to the Receiver (e.g., geographical coordinates).
- Sender—An individual who, while receiving direct sensorial stimuli from an intended target, acts as a putative transmitter to the Receiver.
- Monitor—An individual who monitors an AC session to facilitate data collection.
- Session—A time period during which AC data is collected.
- Protocol—A template for conducting a structured session.
- Response—Material that is produced during an AC session in response to the intended target.
- Analyst—An individual who provides a quantitative measure of AC.
- Speciality—A class of targets that is particularly successful for a given receiver's ability (e.g., people as opposed to buildings).

These definitions will be used throughout this section.

(S/NF) Conceptually, the anomalous–cognition research plan is designed to:

- Identify individuals with natural or trainable ability.
- Train those individuals to improve and stabilize their output.
- Identify optimal target systems.
- Develop optimal data–collection protocols.
- Provide quantitative analysis procedures.
- Define and develop curricula for an intelligence community analyst training school.
- Conduct basic research.

The effort for each of these topics is designed to obtain results, within a timely manner, for basic and applied research that are in direct support to intelligence applications. Each topic is discussed in the following section.

1.1 (U) Major AC Topics for Research

(U) The research topics described in this section are primarily applied. No topic, however, is exclusively applied or basic; rather, only the primary emphasis determines the research domain.

1.1.1 (U) Receiver Selection

(U) In considering research of anomalous cognition, selecting receivers who are potentially capable of demonstrating high–quality AC is of primary interest. Traditional psychological screening methods have not been particularly successful in the past, and general random behavioral screening is substantially inefficient.[16,17] A schematic block diagram and a detailed discussion of the approach for developing a receiver selection procedure can be found in Appendix B. The development phase is similar to the implementation phase, except that during the development, the various selection procedures will change, whereas they will remain stable during the implementation. An overview of an implemented selection procedure is provided here for clarity.*

(U) The first step of selecting a receiver is to identify individuals who would be ideal candidates for possessing natural AC ability. Such individuals might be chosen from the general population at large, chosen on the basis of special characteristics (e.g., neurophysiology), or drawn from specialized groups such as photo interpreters. Past research has indicated that carefully selecting of populations can significantly enhance the likelihood of finding good receivers.[18]

(S/NF) A selected individual enters into a complete screening program which explores a variety of physiological and psychological techniques. Criteria for accepting a given screening procedure must be sensitive to potential receiver specialities. It is important to realize that each of the possible selection procedures that are examined require careful, and sometimes lengthy, testing so that the selection/rejection criteria are statistically meaningful. For example preliminary data suggest that an individual's response to a direct light stimulus may indicate AC ability. While these physiological responses can be measured rapidly, determining the validity of this technique requires a large number of AC trials.†

* (U) All of the topics discussed in this section require development, but the overviews presented here will be of the implementations only.

† (U) In general, it is important to recognize that all of the AC research described in this section require extensive time and resources to be statistically valid.

(S/NF) A successful conclusion of this topic will include a series of speciality–dependent selection manuals that can be used to optimize the staff of an operations unit, and provide addition receivers for research.

1.1.2 (U) Training

(S/NF) Once a receiver has been selected, that individual must be trained for the laboratory environment, an operations unit, or both. Regardless of the end use, the initial stages of the training are similar. A schematic block diagram and a detailed discussion of the approach for developing a receiver training procedure can be found in Appendix C. An overview of an implemented training procedure is provided here for clarity.

(U) In order to assess the effectiveness of the training, a critical first step is to establish a baseline measure of the receivers native ability. This will involve a variety of standardized, speciality–dependent AC tasks, and considerable research is required to identify them.

(U) Once the baselines have been determined, the receiver will be trained by a number of techniques that might include lucid dreaming (i.e., the recognition while dreaming that the experience is a dream), hypnosis, or biofeedback (i.e., the entrainment of specific physiology that is an AC indicator). As each technique is added to the training regimen, resulting AC responses are compared to their respective baselines to determine the degree of improvement. Those techniques that fail predetermined statistical criteria are abandoned for this receiver's training. In the event that all techniques fail to demonstrate improvement, the receiver exits the program.

(S/NF) To assess the efficacy of the training for the operational environment, the receiver will participate in a simulated operational setting. The targets for this test–bed will be known in detail, and the target types will be similar to those in actual operations. Therefore, detailed analysis will be possible and a receiver's operational readiness can be determined.

(S/NF) A successful conclusion of this topic will include a series of training manuals that will include acceptance criteria for individual operational AC–specialists.

1.1.3 (U) Target Selection

(S/NF) A trained receiver specialist requires appropriate targets. Research has shown that there are meaningful differences among target types and that all target are not identically sensed by AC abilities. Specifically, in the laboratory, targets that contain dynamic activity are sensed significantly better than are photographs.[18] Preliminary calculations involving concepts from thermodynamics appear to confirm this finding. In the operational setting, a casual observation has shown that highly dynamic targets (e.g., directed energy systems) are rarely missed in AC sessions.

(U) The target–selection topic examines a number of possible target descriptions and establishes categories based on a variety of target measures (e.g., physical, emotional, functional, etc.). These measures are designed to indicated the degree to which a target may be sensed by AC. A block diagram and a detailed discussion of the approach for developing a target selection procedure can be found in Appendix D, but for clarity, an overview of an implemented target selection procedure is provided here.

(S/NF) Regardless if a candidate target is intended for a laboratory experiment or for an operational activity, the target analysis is identical. The target is parsed into its appropriate aspects such as func-

tional or emotional content, objects, or related conceptual elements. This parsing constitutes a structural definition of the target which can be analyzed with regard to predetermined acceptance criteria and historical performance. Establishing appropriate criteria and meaningful target aspects are substantial research issues. The previous program, however, had developed preliminary mathematical structures that can be used to expedite the research in this effort.[19]

(S/NF) A successful conclusion of this topic will be specific guidelines for the optimal selection of targets for the laboratory and for the operational setting.

1.1.4 (U) Protocol Selection

(S/NF) Once the primary constituents of an AC session have been identified (i.e., a receiver and a target), a session protocol must be selected to optimize the data collection. Session protocols are extensively discussed in the open literature, and the previous program had examined one specific aspect (i.e., feedback of target material to the receiver within and after a session) in depth.[20,21] The requirements for a protocol that is designed for a laboratory setting are considerably more restrictive than those required for an operational setting. For example, providing limited information to a receiver before an operational session is complete might facilitate the acquisition of the desired data, but intermediate feedback is completely restricted in a laboratory experiment. A schematic block diagram and a detailed discussion of the approach for developing session protocols can be found in Appendix E. A conceptual overview is provided here for clarity.

(U) There are four primary areas of interest for an AC session protocol. Some AC sessions are conducted with the receiver in some form of altered state (e.g., a sleep and dreaming) while others are conducted in a fully–awake business–like manner. The general state of the receiver may influence the quality of the data, and it is likely that the receiver conditions will also be speciality and receiver dependent. Similarly, the physical environment (e.g., temperature, geomagnetic field, etc.), how the feedback (i.e., target information overtly provided to the receiver), if any, is provided; and the mechanism by which the receiver is directed to the intended target (i.e., target designation) will influence the quality of the data. In the protocol selection task, the CSP will design and conduct experiments to identify and verify specialty dependent session protocols.

(S/NF) A successful conclusion of this topic will be a set of laboratory and task–specific operations–tested protocols.

1.1.5 (U) Analysis

(S/NF) Having constructed a complete AC–data collection session (i.e., receiver, target, and protocol), the next important topic is data analysis. The kind of analysis required depends upon *a posteriori* knowledge of the intended target. In the laboratory, all the possible targets, including the intended one, are known in detail, thus enabling a detailed analysis. Yet in operations, only partial or little information about the target is known.

(S/NF) The solution to the analysis problem is conceptually simple; all that is needed is an analytical definition of the target and response, and a way of comparing the two. The AC response usually consists of a form of natural language (i.e., written and drawn material); however, a quantitative definition of natural language is currently one of the unsolved problems of artificial intelligence (AI). Similarly, a

quantitative definition of all real targets, including types usually found in operational settings, is also a currently unsolved problem in AI.

(U) In spite of these difficulties, an extensive literature exists on various successful methods of analyzing laboratory AC data. Most of the techniques do not require quantitative definitions of responses and targets, but rely on human judgement for the analysis. Dawes has shown, however, that complex judgements are best divided between human analysts and computers.[22] A recent publication from the earlier program explores this idea by applying a sophisticated mathematical technique, known as fuzzy sets to the analysis of AC data.[19]

(S/NF) An additional problem arises in the assessment of AC data for the intelligence community. A detailed, high–quality example of AC data may have little value to an intelligence analyst, because that information was known from other sources. Likewise, a poor example of AC data might provide a single element as a tip–off for other assets, or provide the missing piece in a complex analysis, and thus be quite valuable. Therefore the intelligence utility of AC data is only weakly connected to the AC quality.

(S/NF) The analysis topic, which is described in detail in Appendix F, extends these concepts to include a wide variety of response mechanisms, including physiological (e.g., electrodermal[23]). In addition, it addresses both laboratory and intelligence application domains by suggesting research directions for constructing AC specialty–dependent *a priori* estimates of AC quality. Addressing the utility issue described above, requires close cooperation with elements within the intelligence community to establish guidelines for assessing the value of AC data.

(S/NF) Although the analysis topic is long–range, a near–term successful mile post for this topic is an enhanced application of fuzzy sets to laboratory and operational data.

1.1.6 (S/NF) An Intelligence Analyst Training School

(S/NF) The ideal circumstance for the use of AC data in the intelligence community would be to treat the data as just another form of HUMINT. With more traditional forms of HUMINT, intelligence analysts are trained to assess the data and to provide a global analysis when HUMINT data are fused with information from other collection assets. AC data should not be treated differently. This research plan includes developing a strategy to construct a curriculum for a training school which specializes in teaching intelligence analysts about AC assets and provides guidelines for producing HUMINT intelligence reports to be easily integrated with the rest of HUMINT data. As with other forms of HUMINT, it is anticipated that this school will teach the special skills that will be needed by intelligence analysts who focus on AC data.

1.1.7 (U) Basic Research

(U) All effort primarily designed to understand the nature of anomalous mental phenomena is defined as basic research. Appendix G contains a schematic diagram and details about this research domain. In this section we consider only the AC aspect, and the AP portion will be discussed below.

(U) Anomalous Cognition basic research contains three major concepts that, at a minimum, can serve as a template for research. The target in the above discussions is generalized to be considered the source of AC information. That information "propagates" across space and time to reach the receiver. This aspect is called the transmission of information. Finally, the information is received by a detector,

an expanded concept of the receiver defined above. Thus, information from a source is transmitted across space and time to a detector.

(U) Continuing the analogy, all psychological, and possibly all physiological aspects of a human detector (i.e., receiver) can be considered as the detector efficiency. This has the advantage of allowing the basic research to parse out the general problem in potentially non–interacting subsections.

(U) Basic research on the source includes items that were discussed as part of the target selection topic in Section 1.1.3 above. In this task, however, the CSP will compute various thermodynamic and other physical aspects of various target systems and correlate the results with AC data.

(U) Basic research on transmission primarily includes general relativity calculations of possible 4–dimensional energy transmission mechanisms. Research has shown that it is possible to gain statistical access to future unrealized events.[24] This implies that information may propagate backward in time, an idea that is a current topic of interest in the general relativity community.[25] If these physics speculations in the literature prove to be true, then causality must have a slight statistical aspect. In other words, usually effects *follow* causes, but *occasionally* physics allows for effects to occur *before* causes.

(U) Basic research on human detectors (i.e., receivers) has been the primary focus of the so–called parapsychology research community. As the name implies, a substantial emphasis has been on the psychological and/or personality variables and their correlations with AC performance. For the most part, this has not been particularly successful. While there is substantial statistical evidence for AC, its correlation with these variables have been weak or non–existant. The CSP will focus its detector research primarily on the central nervous system. As mentioned in the introduction, the preliminary results are encouraging.[10] The goal is to locate a set of neurons that may be evoked by AC stimuli (i.e., AC–evoked response). The five other senses can serve as a model. If AC is sensed by an additional sensorial system, it is likely that the early neuronal processing will be similar to the early processing by the other systems.

(U) If the mechanisms of AC are understood, then in principle the human receivers might be replaced by physical hardware. The very long–term goal of the detector research is to produce such a device.

(U) AC basic research is a long–term activity, but a near–term goal is to gain enough insight into the central nervous system so that biofeedback like training can improve AC reception.

1.1.8 (U) Communication

(U) Research has demonstrated that by using appropriate protocols, it is possible to "send" and receive a simple binary message using AC abilities.[26,27] Usually the techniques involve a redundancy coding scheme to enhance slightly above–chance guessing. For example, suppose the chance probability of guessing the color of a standard playing card is 50%. Suppose also that an AC receiver is successful at guessing the color correctly 60% of the time. In one experiment where the raw binary hitting rate was 60%, redundancy coding increased the hit rate to 100%. In that experiment, 50 binary bits were guessed correctly without a single error.[26]

(S/NF) The CSP plan includes research to improve communications by AC techniques. The earlier redundancy coding efforts were very inefficient, and modern communication theory can significantly

improve the technique. Besides the possibility of a "secure" communications channel, it is possible that kidnapped victims and POWs could "send" information about their circumstances.

1.1.9 (S/NF) Countermeasures

(S/NF) Countermeasures can be examined from both the AC and AP perspectives. If the basic research about the source and/or transmission characteristics prove correct, then Countermeasures are possible within the context of AC primarily through jamming and deception. Countermeasures will remain part of the application potential of the CSP's basic research program.

2. (U) Anomalous Perturbation

(U) The areas of research under the general heading of *anomalous perturbation* (AP) can be divided into two broad categories: macroscopic and microscopic. Macro–AP involves a mental interaction with "human–size" objects, whereas micro–AP implies an interaction with microscopic amounts of matter including individual atoms or single biological cells.

(U) Research of anomalous perturbation is problematical in that the definition of AP is a negative one: *After all known sources of perturbation have been eliminated, what is left is defined as AP.* To isolate a physical/biological system completely from all known sources of perturbation is very difficult. Yet, subjective and laboratory reports of large–scale, putative AP effects continue to appear in the open literature.

(U) The earlier program analyzed 10–years of research literature and found that a definite conclusion about the existence of macro–AP is not possible, and concluding anything about it existence from the "field" literature is even more difficult.[28]

(U) Also in the earlier program, many different physical systems were examined. After careful experimentation, the program was still unable to confirm the existence of macro–AP in the laboratory.[6,7,8]

(U) In a related effort, a single quantum measurement experiment involving photons showed that consciousness was not a *necessary* condition for reality.[9]

(U) Research of microscopic anomalous perturbation is more substantial. A recent report in *Foundations of Physics* analyzed over 800 individual micro–AP experiments involving random number generators.[29] In these experiments, it is generally claimed that an unknown micro–AP process perturbs the generating hardware to produce distorted output statistics. The report further analyzed an extensive set of alternative hypotheses to explain the robust, combined statistical result, and found that none were sufficient to account for the data. However, the heuristic model, *Decision Augmentation Theory*, has convincingly shown, that these effects are due to a form of AC rather than AP.[11]

(U) The main focus of this research plan for macro–AP should be in the analysis of non–AP mechanisms for the effects that are persistently reported in the literature. For example, what are the electrostatic conditions that must exist in order to move small objects isolated under a glass bell jar, or what are the metallurgical conditions that might allow the the bending of rigid metal rods?

(U) The future research of micro–AP should begin with attempts to falsify the predictions of the Decision Augmentation Theory in a variety of target systems.

3. (U) Integration

(S/NF) Research of anomalous mental phenomena must be integrated not only within its own community, but, more importantly, within the broader range of physical and behavioral sciences. In addition intelligence applications should also be integrated with that user community.

3.1 (U) Research Integration

(U) Figure 1 shows a set of descriptions that are specifically related to AC and AP research. The bi–directional arrows indicate that an exchange of data and ideas are possible between the disciplines shown and the CSP. For example, some of the current ideas in meta–analysis of behavioral data that are popular within the psychology community came for the traditional parapsychological research community.[30,31] Yet most all of the psychological screening techniques that are popular with the CSP were developed within traditional psychology.

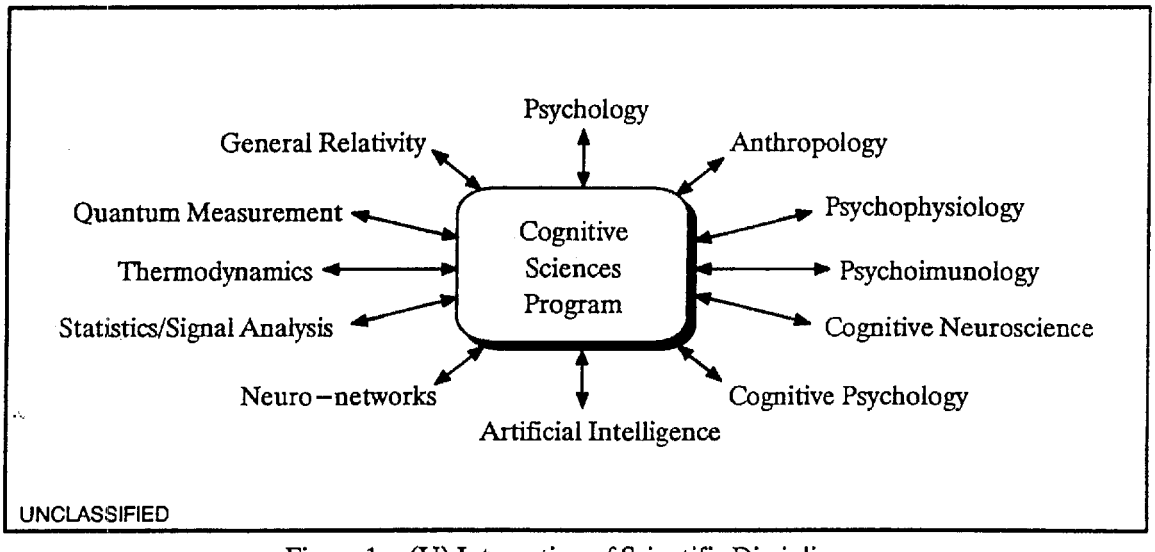

Figure 1 (U) Integration of Scientific Disciplines

(U) Recently the American Anthropological Association formed a new division, *The Society for the Anthropology of Consciousness*, That division is establishing a technical journal to support anthropological research of consciousness. The CSP plan includes collaborative research with members of this division who may be able to contribute to the cultural dependencies of the AC receiver (i.e., detector efficiency).

(U) The psychophysiology of vision has already contributed to the earlier program.[21] Much of what is currently known about the mechanisms and techniques of subliminal perceptions comes from this discipline. The CSP anticipates a collaborative effort with researchers at SRI International and Edinburgh University in attempt to understand how the central nervous system process subliminal stimuli. This should assist in the CSPs search for an AC evoked response.

(U) The relationship between mind and body is currently discussed in the research literature[32] as well as the popular press. Researchers at the California Institute for Transpersonal Psychology have been active in investigating the role of mental attitudes and body chemistry. While there may not be a direct link with AC, and exchange of techniques and experimental designs would be helpful.

(U) *The Journal of Cognitive Neuroscience* contains at least one article of interest to the CSP each issue. This discipline is where most of the cognitive work with the neuromagnetism is conducted. The CSP has already discussed the possibility of a collaborative effort with researchers at the NIH.

(U) Stanford University has been conducting research on internal imagery. The manipulation and control of internal imagery is extremely important in understanding the source of internal noise during an AC session and a collaborative effort with Stanford should yield immediate results in noise reduction.

(U) As was mentioned in Section 1.1.5 (i.e.,Analysis), artificial intelligence has been studying both element with regard to AC analysis—natural scenes and natural language. While artificial vision may not yield immediate results, some of the aspects of scene analysis would contribute.

(U) Neuronetworks have already been used successfully in AP research.[33] These networks are particularly good at recognizing subtle patterns in complex data, and are being applied in the subjective arena of decision making in business.[34] In order to improve AC analysis, the CSP will conduct a collaborative effort with other SAIC scientists who are active in neuronetwork research and with selected individuals who have had success with highly subjective data.

(U) Statistics is the heart of AC research in that most of the results are usually in statistical terms. Hypothesis testing has traditionally been the primary focus, but there are other possible approaches that should be explored. Statistics researchers at Harvard have expressed interest in contributing to a CSP research effort.

(U) A major portion of the CSP's effort will be a search for an AC evoked response in the brain. Sophisticated signal processing is required in that magnetic signals from the brain can not be easily characterized by standard statistical practices.[10] Thus many of the traditional signal analysis methods are invalid. Los Alamos National Laboratory has expressed interest in contributing in this domain.

(U) Classical statistical thermodynamics may be the heart of understanding the nature of an AC source of information. As was mentioned in the Historical Background section above, a concept called entropy may be related to what is sensed by AC. The CSP intends to collaborate with a variety of university physics departments to calculate the appropriate parameters.

(U) Researching the nature of quantum reality involves understanding the mechanisms and definitions of what constitutes a measurement. The earlier CSP publication provided valuable insight into the role of consciousness in determining quantum reality; however, a number of single−neutron experiments should be conducted. Researchers at an Austrian university in Vienna, have been studying the effects of very slow neutrons.[35] Their experiments are particularly suited for the study of conscious effects on single particles.

(U) As was mentioned in Section 1.1.7 (i.e., Basic Research), physics research has indicated that it may be possible for information to travel backward in time.25 The physics department at the California Institute of Technology has been the center for this research in general relativity. The CSP will collaborate with them to calculate time−reversed information flow parameters.

3.2 (S/NF) Integration into the intelligence Community

(S/NF) In Section 1.1.6, we discussed how AC data in support of operational activity should be considered as just one additional source of HUMINT data. If the CSP, working with appropriate government agencies, could be successful at that task, then the infrastructure already exists for seamless integration into the intelligence community.

SG1B

IV CONCLUSIONS AND RECOMMENDATIONS (U)

(S/NF) This report has described a multi-facited, integrated, long-term basic and applied research plan. If all the topics are fully implemented in parallel, the plan entails an effort of approximately 125 man-years over the next five years. This includes a prime contractor, a large variety of subcontractors, appropriate hardware, support, and significant collaboration with appropriate government agencies in support and development of intelligence applications.

(S/NF) The CSP recommends a graduated effort that builds upon the previous and current program toward the fully implemented research endeavor in the next few years. The program provides for many mileposts checks not only to effectively direct the research, but also to determine its level of effort. The CSP further recommends that the government maintain significant policy oversight and direct that the technical effort be closely monitored by a panel of scientific experts.

ALL FIGURES ARE UNCLASSIFIED IN THEIR ENTIRETY

Approved For Release 2000/08/08 : CIA-RDP96-00789R003100060001-1

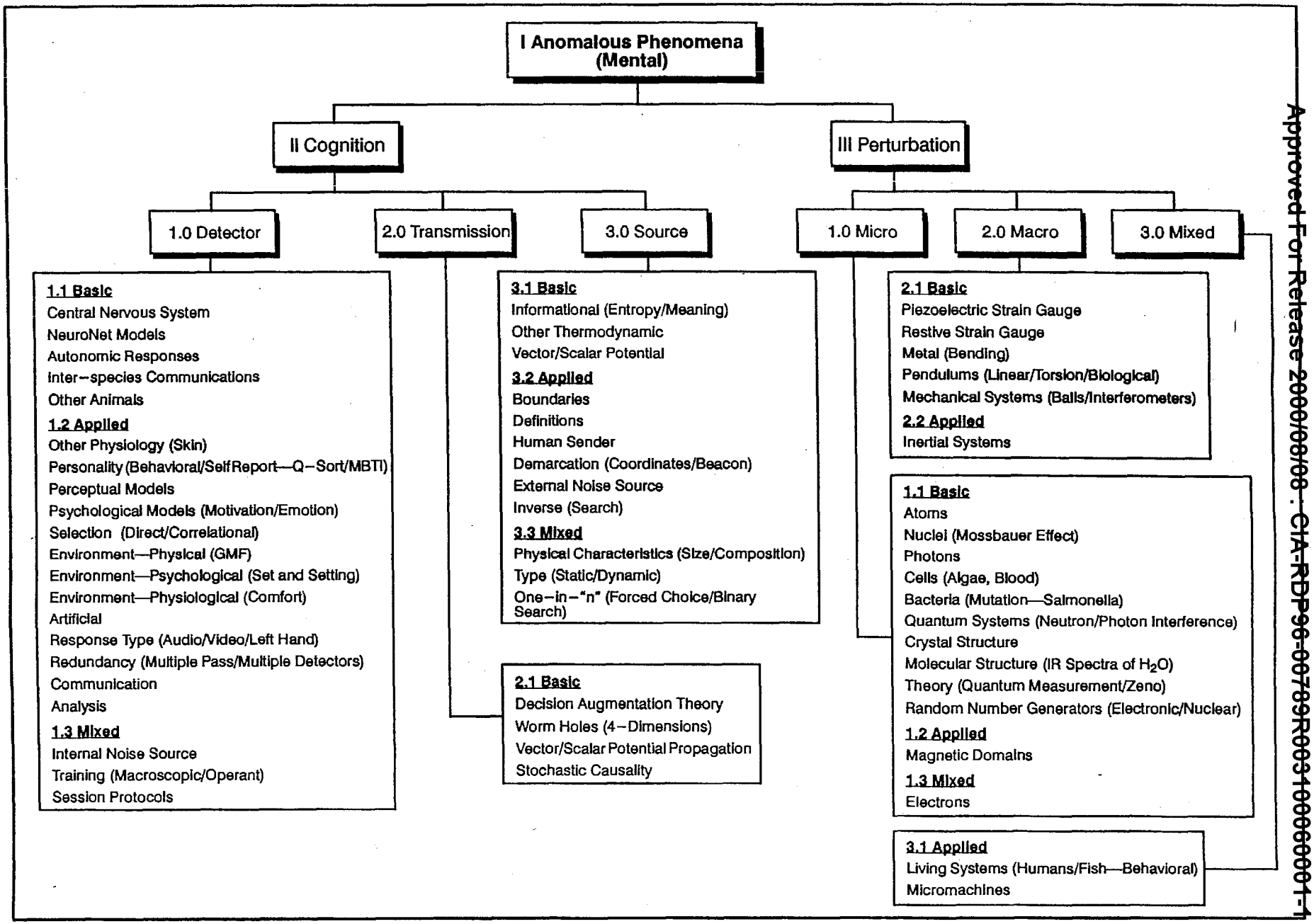

Figure A.1 (U) Research Overview

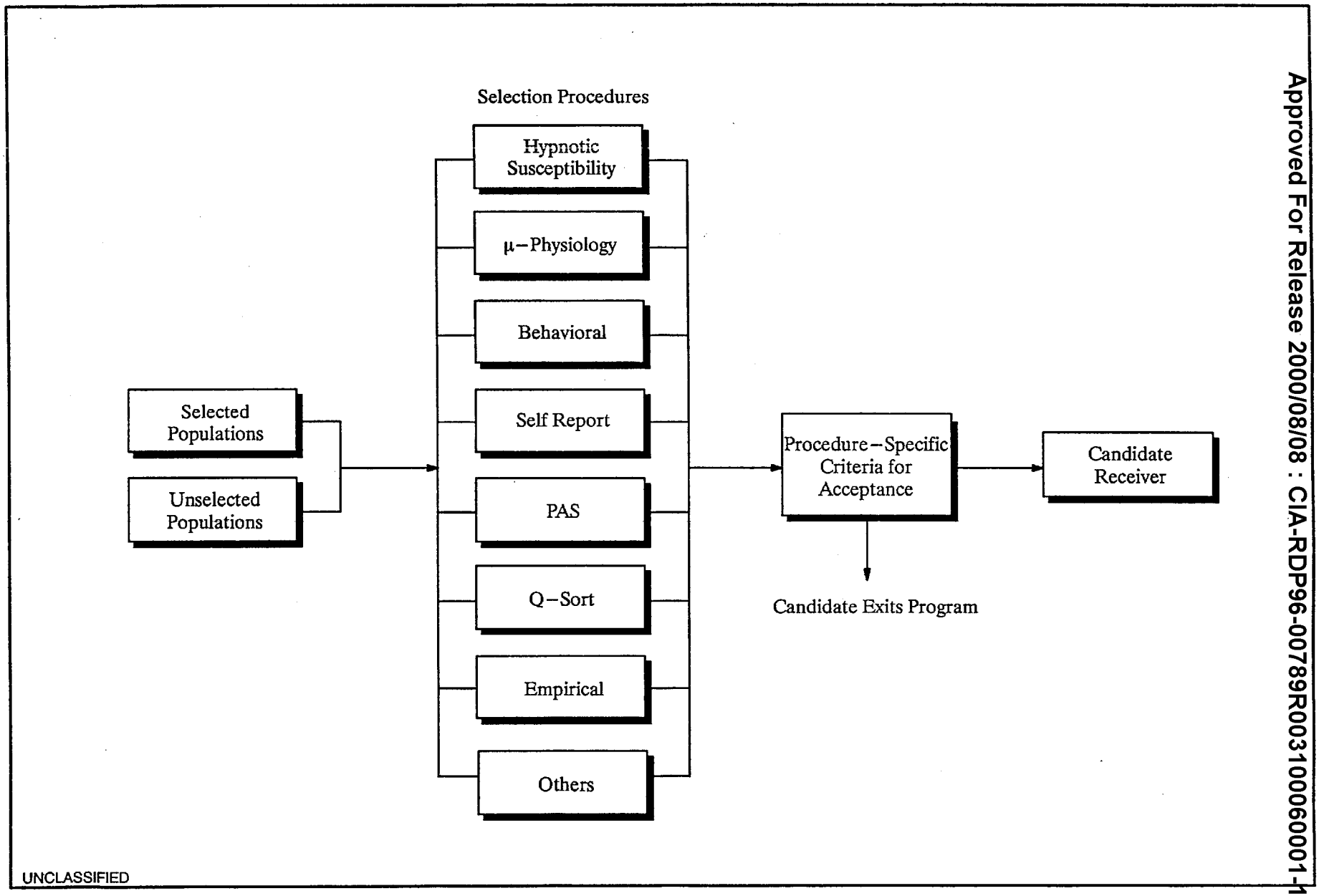

Figure B.1 (U) Receiver Selection

Approved For Release 2000/08/08 : CIA-RDP96-00789R003100060001-1

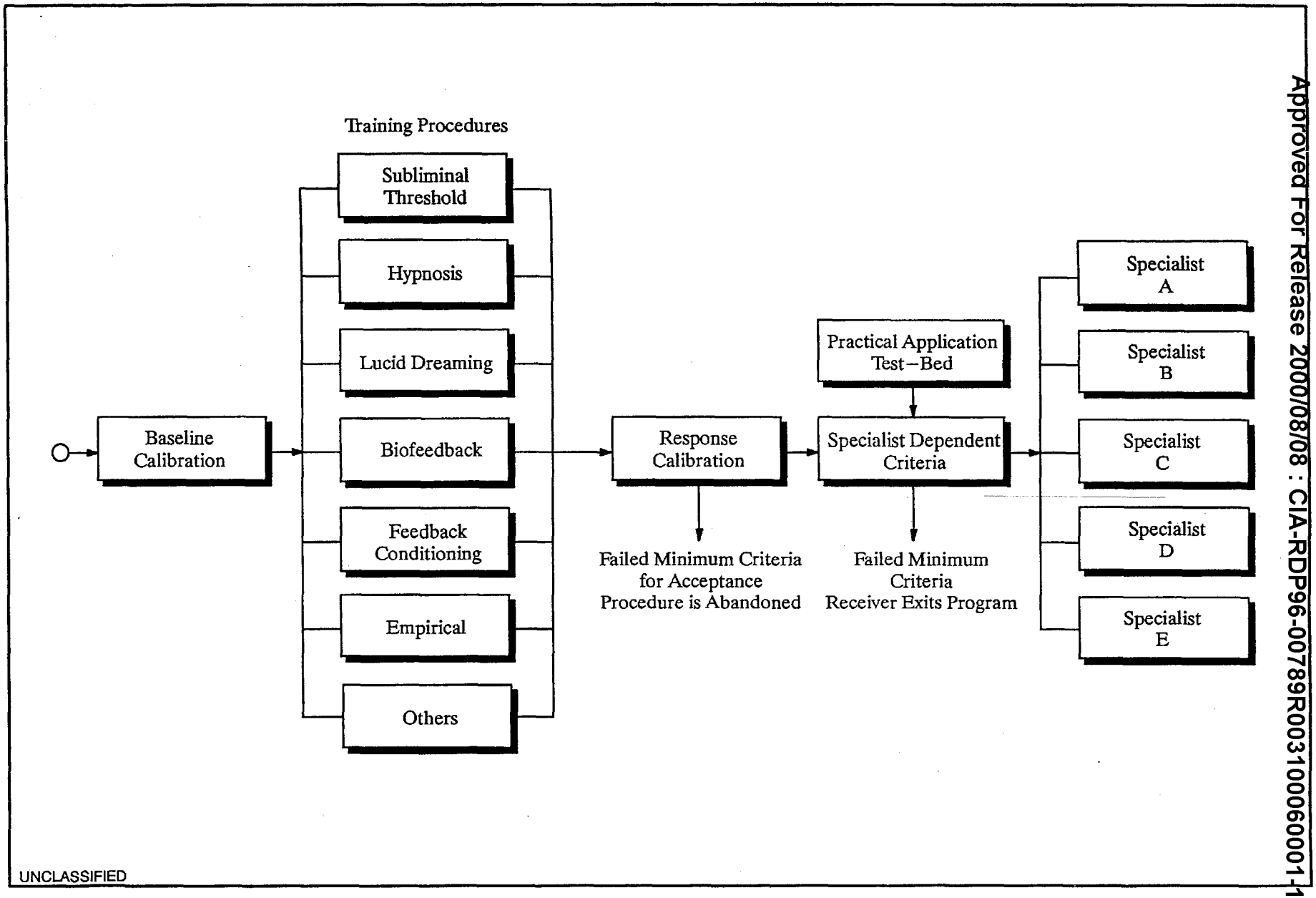

Figure C.1 (U) Training

Approved For Release 2000/08/08 : CIA-RDP96-00789R003100060001-1

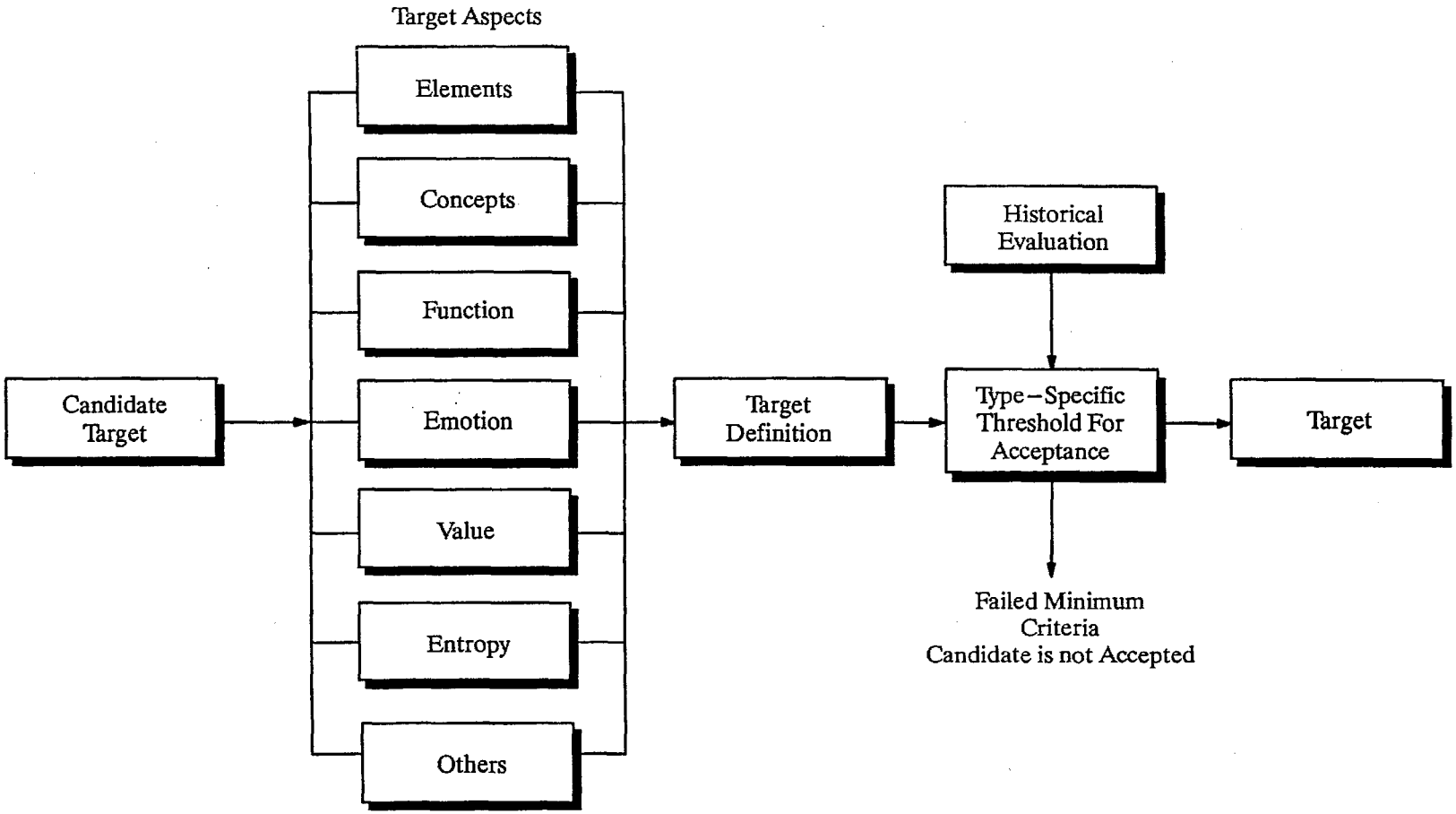

Figure D.1 (U) Target Selection

Approved For Release 2000/08/08 : CIA-RDP96-00789R003100060001-1

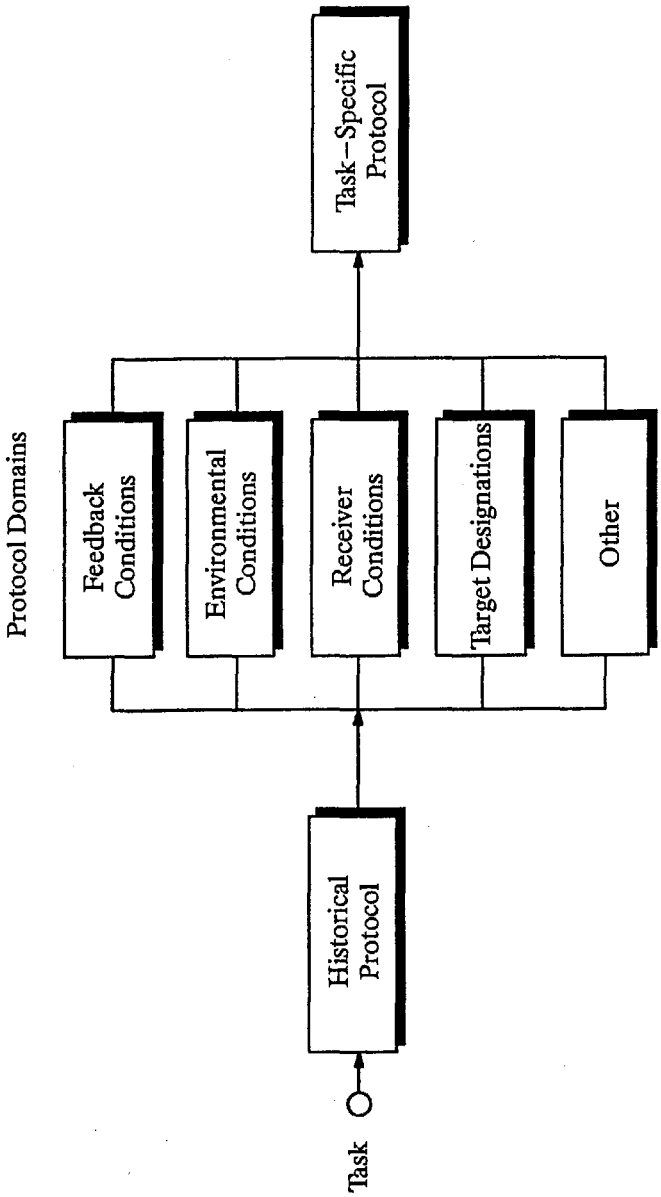

Figure E.1 (U) Protocol Selection

UNCLASSIFIED

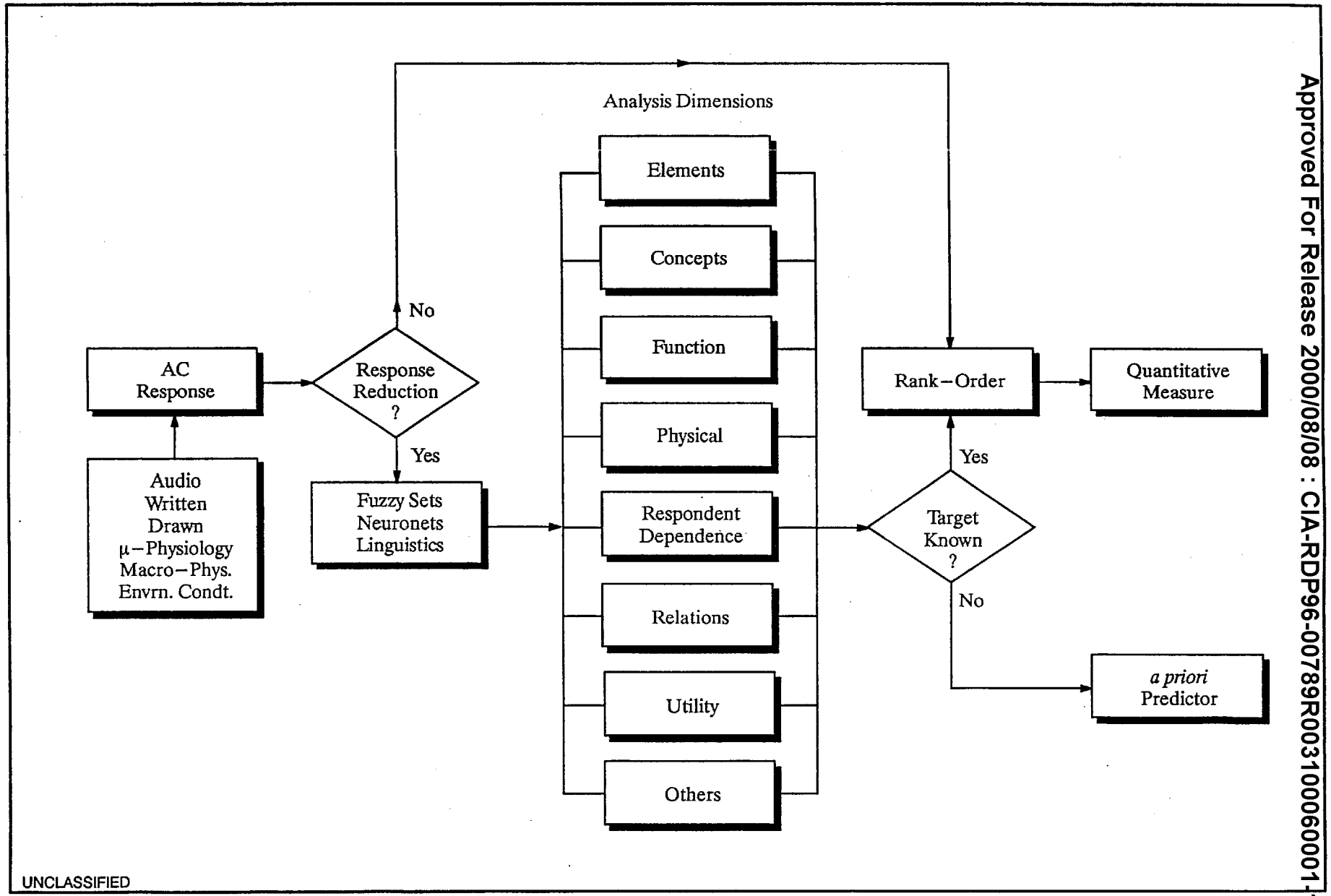

Figure F.1 (U) Analysis

Approved For Release 2000/08/08 : CIA-RDP96-00789R003100060001-1

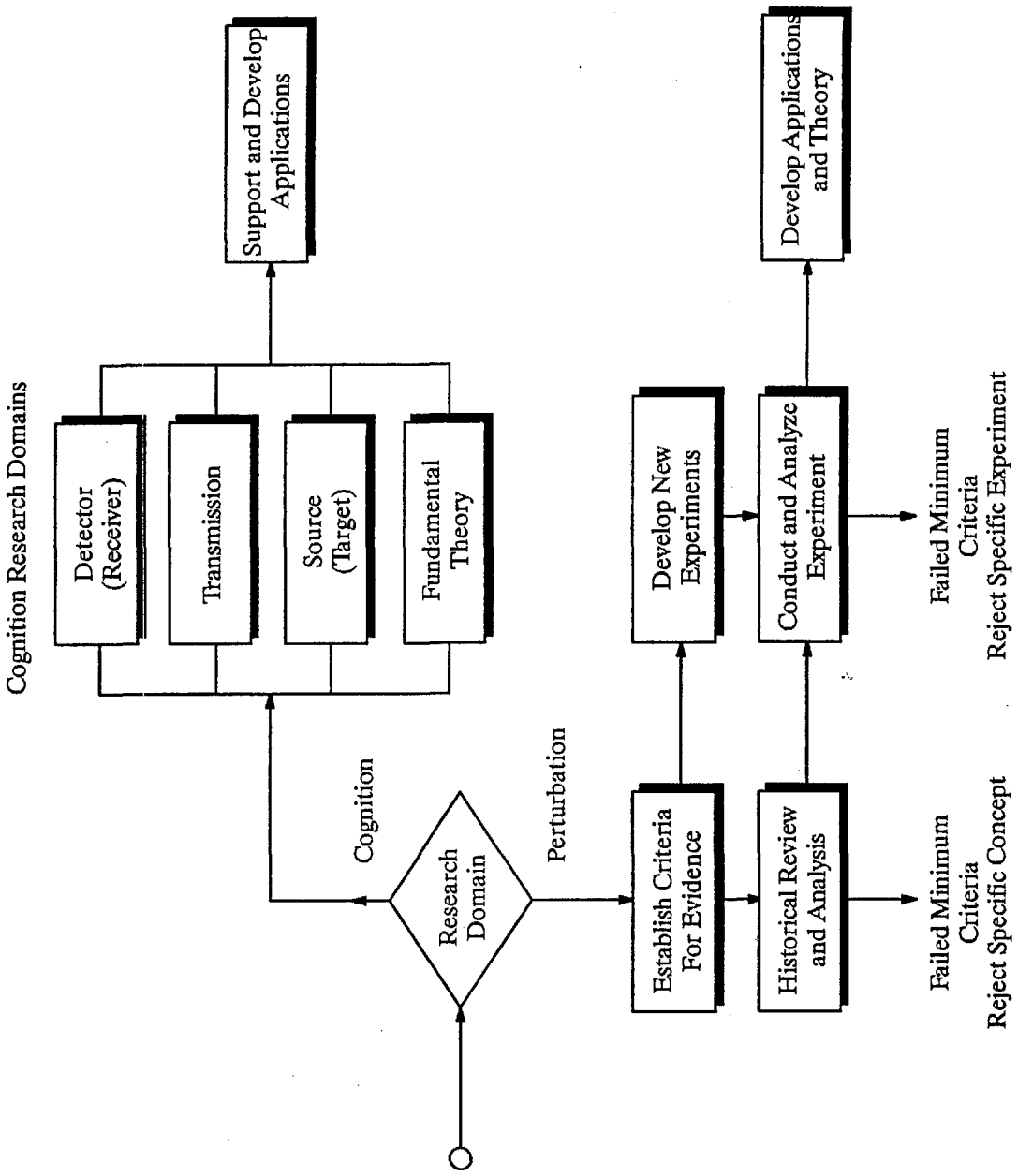

Figure G.1 (U) Basic Research