

OPTIMAL ASSIGNMENT PROCEDURES
IN SUPPORT OF MILITARY ACCESSIONING SYSTEMS

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OVERVIEW

- Existing personnel acquisition systems.
- Air Force's APDS - PROMIS
- Applicability to other personnel systems

EXISTING

COMPUTER-BASED PERSONNEL ACQUISITION SYSTEMS

- Army REQUEST
- Navy PRIDE
- Marines ARDP
- Air Force APDS - PROMIS

Figure 1

JOB PROPERTIES ARRAY

Job 1			
Job 2			
•			<p>Relevant Job-Attribute Information</p> <ul style="list-style-type: none"> - Tasks to be performed - Relative Difficulty - Aptitude Required - Experience Required - Training Required - Geographical Location - Physical Characteristics Required • • •
•			
•			
Job J			
•			
•			
External Job			

JOBS

Figure 2

PERSON CHARACTERISTICS ARRAY

PERSONS

Person 1			
Person 2			
•			Relevant Person-Attribute Information - Name - SSAN - Age - Education - Aptitude Scores - Home Address - Interests - Work Experiences • • •
•			
•			
Person I			
•			
•			
Shadow Person			

Figure 3

PREDICTED PAYOFF ARRAY

		<u>JOBS</u>				External Job
		Job 1	Job 2	• • •	Job J • • •	
PERSONS	Person 1					
	Person 2					
	•					Predicted Value (PAYOFF) to the Air Force if Person I is assigned to Job J (i. e. a particular Person to a particular Job)
	•					
	•					
	Person I					
	•					
•						
•						
Shadow Person						

Figure 4
ALLOCATION ARRAY

		<u>JOBS</u>						External Job
		Job 1	Job 2	● ● ●	Job J	● ● ●		
<u>PERSONS</u>	Person 1							
	Person 2							
	● ● ●			Numerical Information to reflect the desirability of assigning Person I to Job J for overall Air Force effectiveness				
	Person I							
	● ● ●							
	Shadow Person							

Figure 5

EXAMPLE OF PREDICTED PAYOFF ARRAY
AND ALLOCATION ARRAY

PREDICTED PAYOFF ARRAY

JOBS

	Job 1	Job 2	Job 3
Person 1	8	7	6
Person 2	5	1	0
Person 3	6	4	1

PERSONS

ALLOCATION ARRAY

JOBS

	Job 1	Job 2	Job 3
Person 1	11.0	13.0	14.0
Person 2	14.0	11.5	12.5
Person 3	13.0	13.5	11.5

The higher numbers in the Allocation Array reflect the desirability of assignments for overall effectiveness of the Air Force

[Overall Effectiveness = 6 + 5 + 4 = 15]
When Highest
Allocation Indexes
Are Used

PERSONS

Figure 6

SUMMARY OF THE PERSONNEL ASSIGNMENT SYSTEM

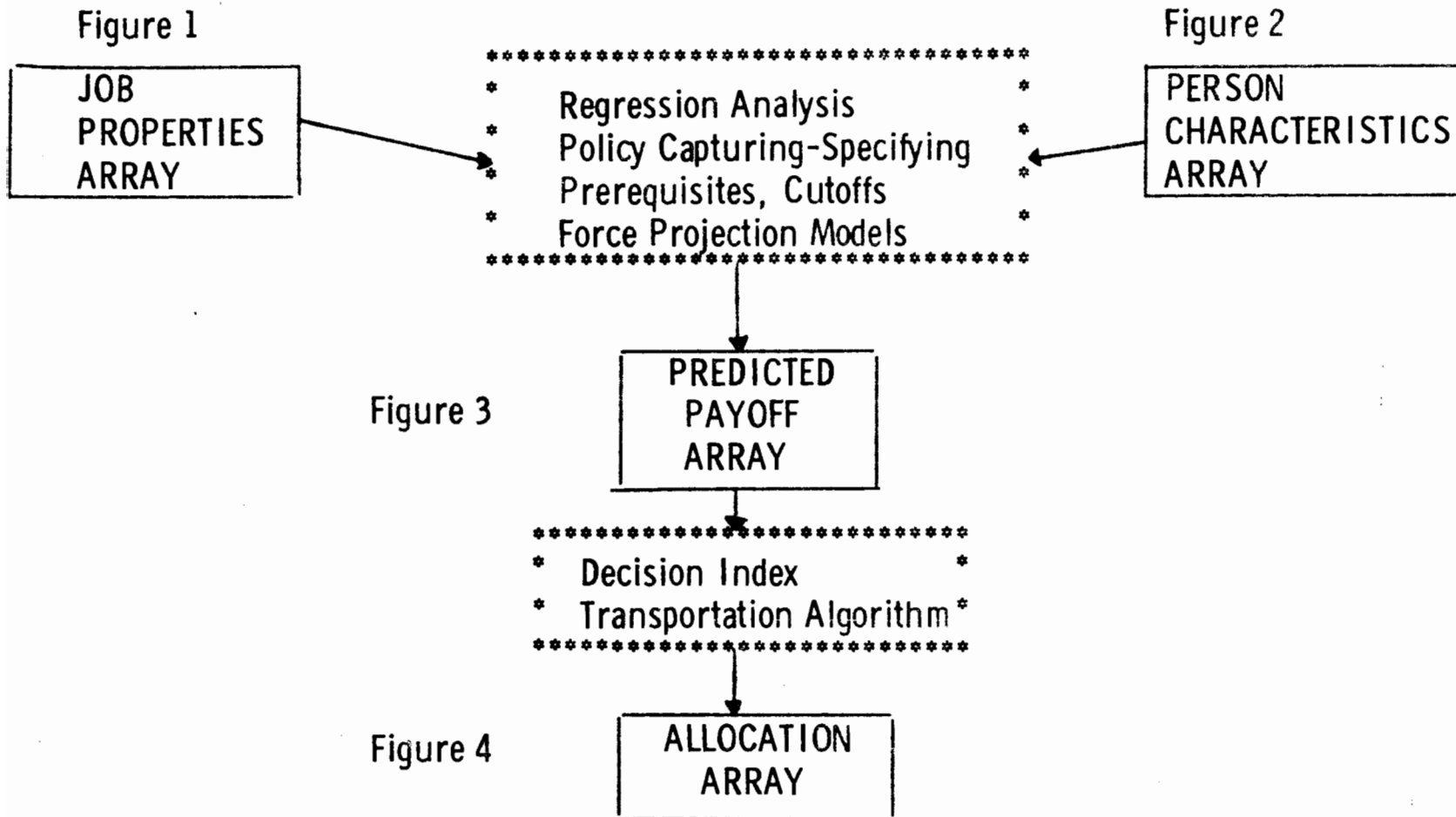
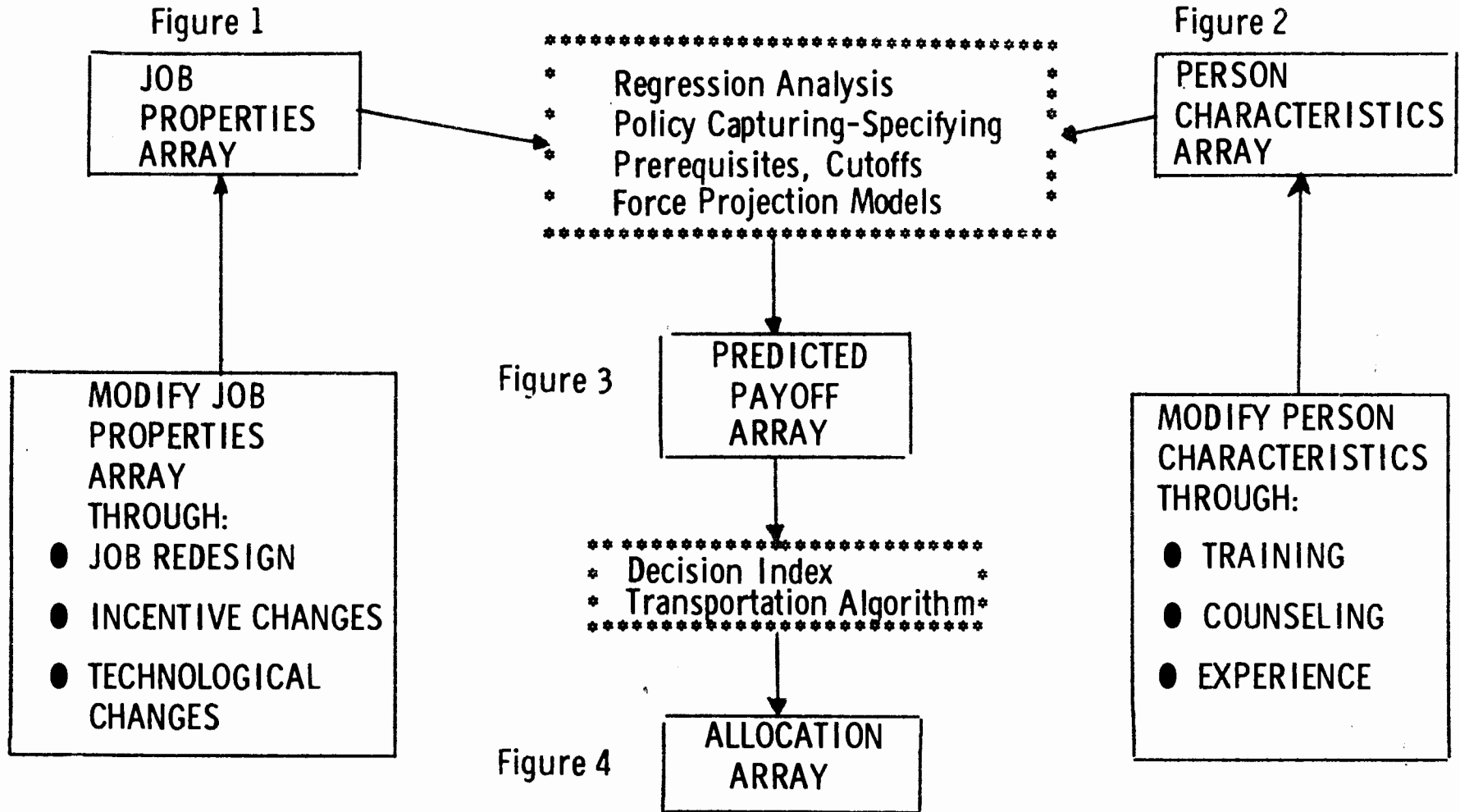


Figure 7

A VIEW OF PERSONNEL ASSIGNMENTS
INCLUDING TRAINING AND JOB MODIFICATION



WHAT IS APDS-PROMIS?

- Real-time computer system to replace telephone link
- Job counselling transferred to AFEES processing team
- Computerized preenlistment job classification (P/J match)
- Recruiting objectives for 210 days
- Improved requirement accounting
- Reduced manual reporting
- More professional recruiting image

SPECIAL FEATURES OF
PERSON-JOB MATCH FOR PROMIS ENHANCEMENT

- Sequential consideration of persons to be assigned
- Future accessions are unknown
- List of opportunities must be provided
- Opportunities must be immediately available

SPECIAL FEATURES

FOR ACCEPTANCE AND MAINTENANCE

- Pay-off functions easy to define and modify
- Effects of modifications are easily visible on opportunities list
- * ● Provide capability through which human resources research findings can affect and improve individual personnel assignments

OPPORTUNITY

Person/Job Match

- Input applicant aptitude, physical & preference data
- Test qualification for jobs
- Test availability of jobs
- Compute 'worth' (appropriateness) value for each job
- Maximize total worth to Air Force and individual
- Provide list of most appropriate jobs
 - GTEP
 - Open enlistment
- Offer option to reserve job from list

CREATING PREDICTED PAY-OFF
OF A PERSON-JOB COMBINATION
USING
POLICY SPECIFYING

- * ● Person-Aptitude and Job Difficulty
(The A-D Component)
 - Technical training success
 - Aptitude area preferences
 - Rate of job fill
 - Minority job fill

APTITUDE POTENTIAL AND JOB DIFFICULTY

$$Y = f(A, D)$$

where

A = Aptitude for particular job

D = Relative difficulty of particular job

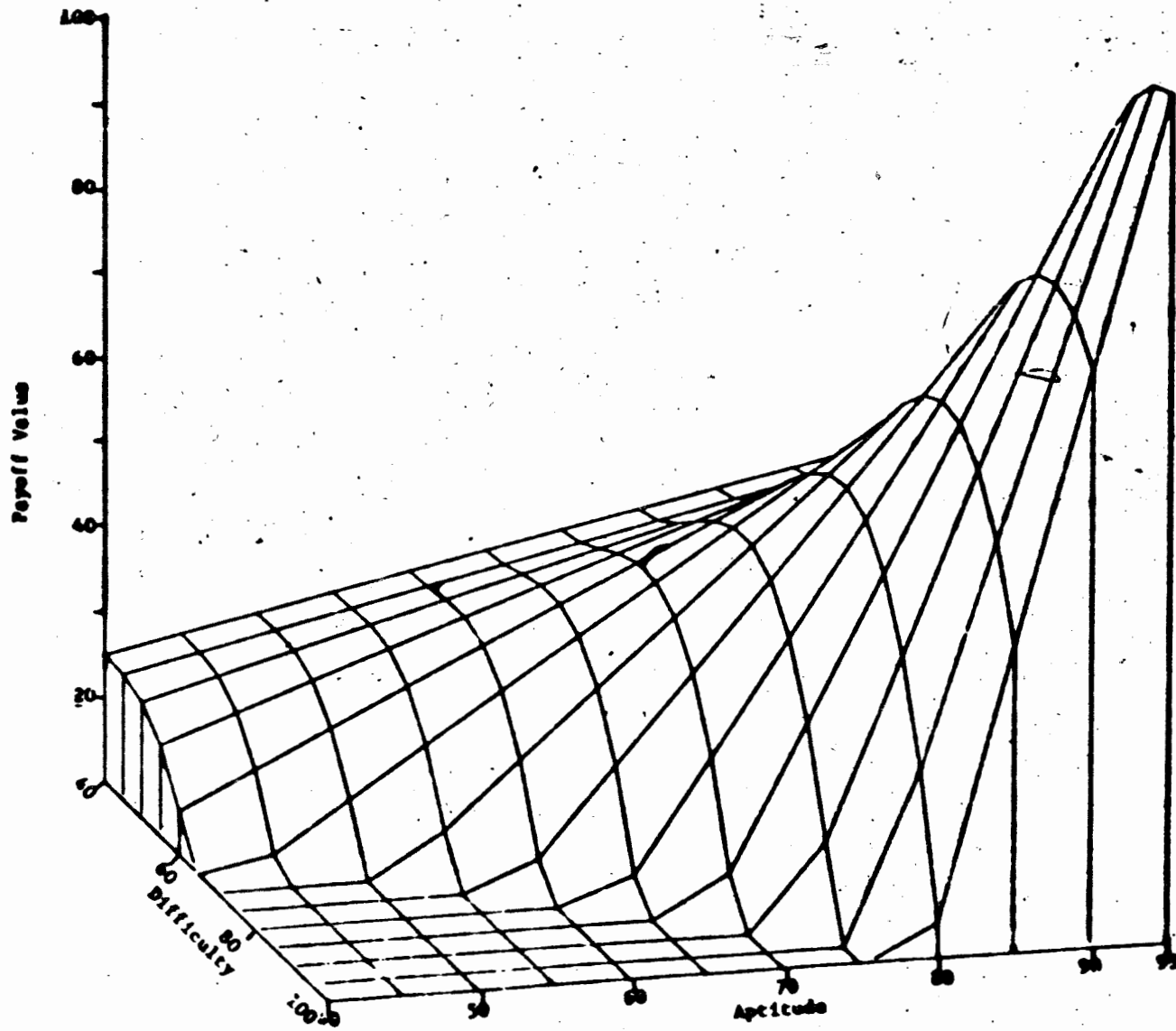
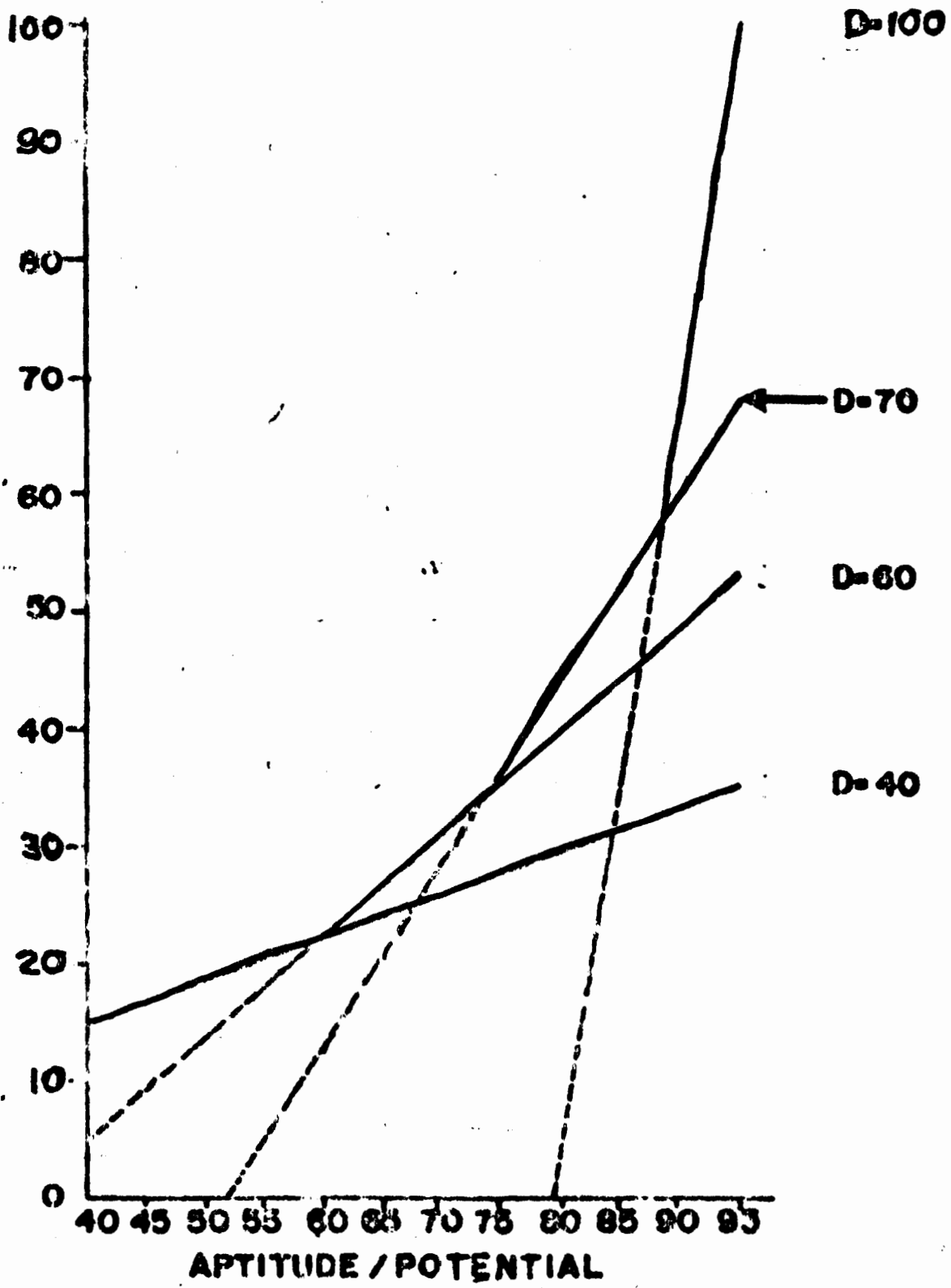
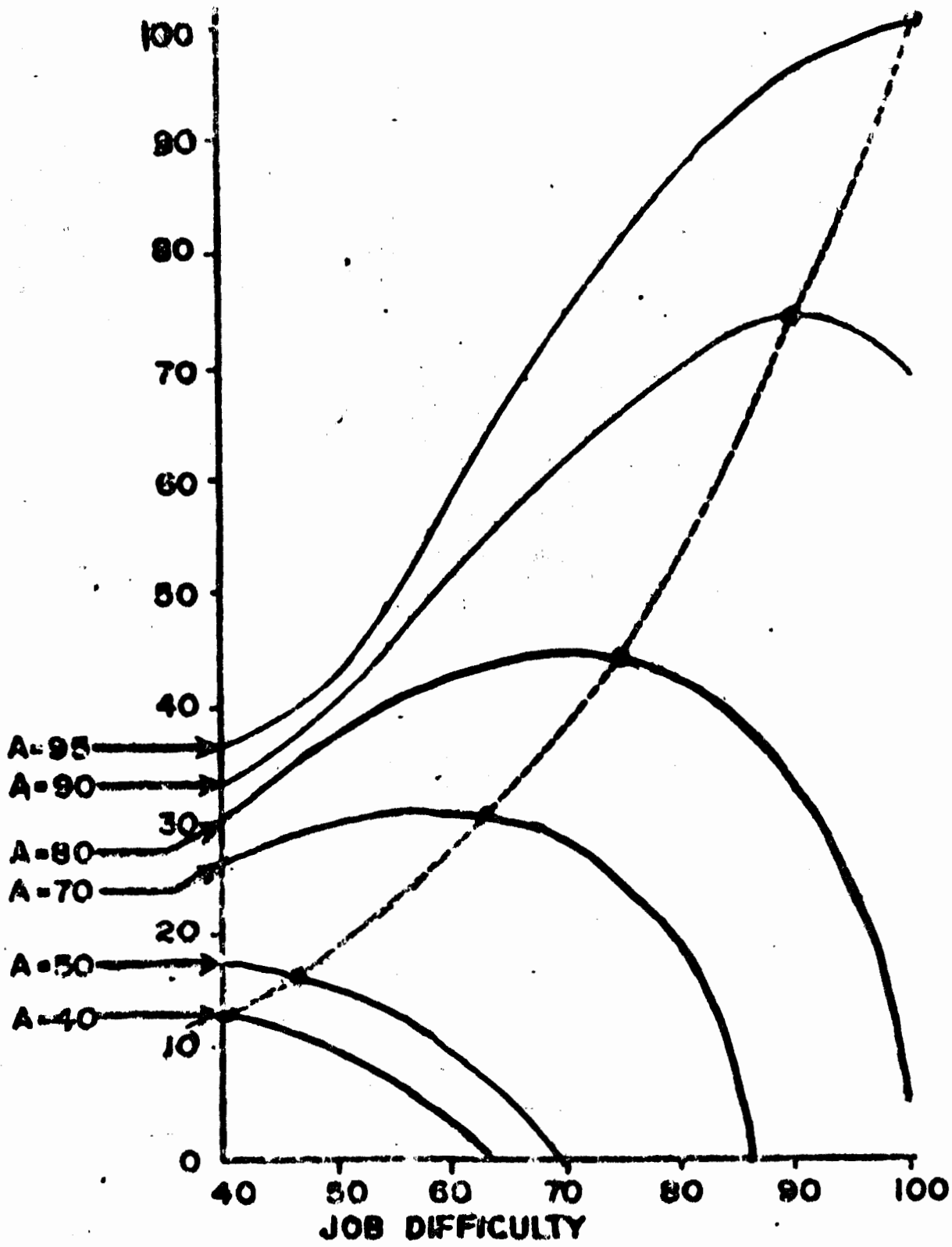


Figure 1. Aptitude-Difficulty Component





TECHNICAL TRAINING SUCCESS

$Y = f(\text{AQE, AFQT, HS courses, Tech Schools})$

APTITUDE AREA PREFERENCES

$$Y = f(M, A, G, E \text{ preferences})$$

where

M = Mechanical AI

A = Administrative AI

G = General AI

E = Electronics AI

JOB FILL RATE

$$Y = f(P_j, T, K)$$

where

P_j = Percentage of Jobs sold

T = Amount of time since job release

K = Job fill priority

MINORITY JOB FILL

$$Y = f(P_m, G)$$

where

P_m = Percentage of jobs sold to minorities

G = Desired minority job fill goal

ASSIGNMENT OF PERSONNEL
TO MAXIMIZE OVERALL AIR FORCE EFFECTIVENESS

Decision index used as the allocation index
for ordering the opportunities list

PLANNED IMPROVEMENTS

- * ● -- Combine attrition prediction information with training costs into the pay-off function to direct poor risks to less expensive training and good risks to more expensive training
- -- Introduce vocational interest career examination (VOICE) into the pay-off function to improve job satisfaction and personnel retainability

APPLICABILITY TO OTHER PERSONNEL SYSTEMS

- -- Air Force enlisted re-assignments
- -- Officers assignments
- -- AF civilians
- -- Others

SUMMARY

- A mechanism is evolving through which human resources research findings can affect and improve individual personnel assignments
 - Personnel aptitude - job difficulty interaction
- The system flexibility allows for introduction of new components and easy maintenance of the system
 - Attrition - cost information
 - Vocational interest information
- The approach can be used by a wide range of personnel systems