# Intelligence as Warp and Woof of Human Affairs

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### "Intelligence"=cognitive variation



### Falsifiable hypothesis

"Cognitive variation within our species—specifically g—has become the prime, deep organizer of human affairs"



(Gordon, 1997)

# Sociology's claims in the 1970s *My focus of hypothesis testing at that time*

- Empirical facts:
  - Education predicts job level better than IQ does
  - But education doesn't predict job performance
- False inferences:
  - IQ can't predict job performance
  - Virtually everyone could do all jobs
- Conclusion:
  - Education and IQ do not reflect "merit," but social class in disguise. It's a way the ruling classes maintain dominance.
  - IQ differences created by & are secret surrogate for social class
- Generalization (initial assumption confirmed!):
  - Occupational prestige ladder has no functional basis
  - Human inequality is socially constructed, the result of oppression and privilege

Generalized today to all group disparities—education, health, crime, etc.

# SES-IQ-inequality nexus: What's nearest its center?



# Distribution(s) of contending "prime causes" of social disparities



#### All were conceptual "black boxes"



### Falsifiable hypothesis

"Cognitive variation within our species—specifically g—has become the prime, deep organizer of human affairs"



Amount of education behaves like consumption item, not deep cause

### Falsifiable hypothesis

"Cognitive variation within our species—specifically g—has become the prime, deep organizer of human affairs"



Income distributed very differently, like a multiplicative outcome (e.g., scientific productivity, patents, genius)

### Why?

 Cognitive diversity is the prime generator of differential odds of success

#### Argument

First, only cognitive variation is a biological fact In all populations, too



#### g is enmeshed in brain physiology

(Deary, 2000; Jensen, 1998)



<sup>\*</sup> Higher if tasks cumulated

#### **Genetically** enmeshed in brain physiology



### g is not a place or a module in brain

But patterns of activation distributed across whole brain



(Jung & Haier, 2007)

Highly general across brain & genes

#### Fluid *g* rises, then falls with biological age

All fluid abilities move in tandem

"Maximal" trait--much can interfere



Age

#### Genetic portion of IQ <u>variation</u> rises with age Family SES contributions to IQ <u>variation</u> wash away



#### Cognitive variation is highly structured



#### Cognitive variation is highly structured



Phenotypic structure appears to be replicated at genetic level

# What about other evolutionarily-rooted human differences?

Variation in *g* has become the most <u>consistent</u> generator of differential ("unequal") odds

Examples shortly...

- <u>Not personality</u>: More is always better with g, but not personality traits
- <u>Not physical capabilities</u>: Modernization raises premium on cognitive competence, but lowers it for physical
- <u>Not social relations</u>: Modern democracies atomize social life; increase anonymity, individualism, and formal (rather than informal) control—all favoring g
- <u>Not mating & sexual dimorphism</u>: Rising premium on *g* reduces import of sexual dimorphism and incentive for family formation

Even miniscule differences in odds are powerful, if consistent, because consistency allows cumulation of small effects

**Recall Spearman-Brown Prophecy** Percent of common variance (reliability) • Formula for test reliability 1,000 2,000 N=2 30 100 500 r<sub>xx</sub> .5 67 97 99 99+ 99+ 99 +Common variance =  $k(r_{xx}) \div [1 + r_{xx}(k-1)],$ .4 57 95 98+ 99+ 99+ 99 +Where, .3 46 93 98 99+ 99 +99+ k = number of items.  $r_{xx}$  = average intercorrelation of items .2 29 88 97+ 99 99 +99 +.1 18 77 92 98 99 99 +01 2 50 23 83 91 95 Tiny g-based natural selection over .001 3 67 <1 11 33 50 2,000 generations?

# Spearman-Brown phenomenon in life's everyday "tests"



.11	.1 <sub>1</sub>	.1 <sub>1</sub>	1.1	.1 <sub>1</sub>	1.1	.1 <sub>1</sub>
.11	.1	.11	.11	.1 <sub>1</sub>	.11	1.1
.11	.1	.11	.1 <sub>1</sub>	.1 <sub>1</sub>	.11	11
.11	<u> .1</u>	.1	.1 <sub>1</sub>	1.1	1	11

#### What increases k (number of items)?

	IQ distribution for:	Odds cumulate with more:				
		Tasks	Events (time)	Persons	Groups	
	Acı	Across units (decontextualized)				
Need to look beyond individual-level,	Individuals (probands)					
where processes will work on different scale	Populations (aggregates)	Ado	ditively?			
	Across systems (interpersonal contexts)					
Critical in a social	Subcultures					
species		Non-additively?				
	Political units					
Need to look beyond individual-level, where processes will work on different scale	Individuals (probands) Populations (aggregates) Across Subcultures Political units	Add systems	ditively? (interperso	nal context	s)	

#### What increases r

(intercorrelation among life's mental "test" items)?

Most importantly,

- Complexity of tasks (it increases their *g* loading)
- Tasks performed independently (without help)
- Performance objectively measured
- Measure is reliable
- As a consequence, instrumental rather than socioemotional tasks

Note that both *k* and *r* are <u>task</u> (not person) attributes



# Will show: *g*-based odds cumulate, cascade & compound across lives, groups & cultures



## ?

# How different are people, anyway?

# Individual differences are meaningfully (shockingly) large

In criterion-related terms



#### Estimated levels of usual cognitive functioning

U.S. Dept of Education 1993 survey of adult functional literacy (nationally representative sample, ages 16+, N=26,091)

NALS Level	% pop.	Simulated Everyday Tasks Routinely able to perform tasks only up to this level of difficulty
5	3%	<ul> <li>Use calculator to determine cost of carpet for a room</li> <li>Use table of information to compare 2 credit cards</li> </ul>
4	17%	<ul> <li>Use eligibility pamphlet to calculate SSI benefits</li> <li>Explain difference between 2 types of employee benefits</li> </ul>
3	31%	<ul> <li>Calculate miles per gallon from mileage record chart</li> <li>Write brief letter explaining error on credit card bill</li> </ul>
2	27%	<ul> <li>Determine difference in price between 2 show tickets</li> <li>Locate intersection on street map</li> </ul>
1	22%	<ul> <li>Total bank deposit entry</li> <li>Locate expiration date on driver's license</li> </ul>

#### Estimated levels of usual cognitive functioning

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5	3%	<ul><li>Use calculator to</li><li>Use table of inform</li></ul>	"process complexity"		
4	17%	<ul> <li>Use eligibility par</li> <li>Explain difference</li> </ul>	level of inference		
3	31%	<ul> <li>Calculate miles per</li> <li>Write brief letter e</li> </ul>	abstractness of info		
2	27%	<ul> <li>Determine differer</li> <li>Locate intersectio</li> </ul>	<ul> <li>distracting information</li> </ul>		
1	22%	<ul><li>Total bank deposit</li><li>Locate expiration</li></ul>	"problem solving"		

#### Estimated levels of usual cognitive functioning

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NALS Level	% pop.	Simulated Everyday Tasks				
5	3%	<ul> <li>Use calculator to determine cost of carpet for a room</li> <li>Use table of information to compare 2 credit cards</li> </ul>				
US Dept of Education: People at levels 1-2 are below literacy level required to enjoy rights & fulfill responsibilities of citizenship						
2	27%	<ul> <li>Determine difference in price between 2 show tickets</li> <li>Locate intersection on street map</li> </ul>				
1	22%	<ul><li>Total bank deposit entry</li><li>Locate expiration date on driver's I</li></ul>	Could teach these individual items, but not all such tasks in daily life			

#### Life as a test



.11	1.1	.11	.11	1.1	.11	.11
.11	.1 <sub>1</sub>	.11	.11	.1 <sub>1</sub>	.11	.11
.11	1.1	.11	.11	1.1	.11	.11
.11	1.1	.11	.11	1.1	.11	.11

22% of US adults

78% of adults do better

Here is a Social Security card. Sign your name on the line that reads "signature."

- Literal match
- One item
- Little distracting info

SIGNATURE FOR SOCIAL SECURITY PURPOSES • NOT FOR IDENTIFICATION

★ 80% probability of correctly answering items of this difficulty level

27% of US adults

51

%

22

%

You are a marketing manager for a small manufacturing firm. This graph shows your company's sales over the last three years. Given the seasonal pattern shown on the graph, predict the sales for Spring 1985 (in thousands) by putting an "x" on the graph.



### Another item at NALS Level 2





You need to smooth wood in preparation for sealing and plan to buy garnet sandpaper. What type of sandpaper should you buy?



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Reduced from original copy



17% of US adults

3%

On Saturday afternoon, if you miss the 2:35 bus leaving Hancock and Buena Ventura going to Flintridge and Academy, how long will you have to wait for the next bus?



#### 3% of US adults

97

%

Using the information in the table, write a brief paragraph summarizing the extent to which parents and teachers agreed or disagreed on the statements about issues pertaining to parental involvement at their school.

- Search through complex displays
- Multiple distractors
- Make high-level text-based inferences
- Use specialized knowledge

#### Parents and Teachers Evaluate Parental Involvement at Their School Do you agree or disagree that ...? Level of School Total Elementary Junior High High School percent agreeing Our school does a good job of encouraging parental involvement in sports, arts, and other nonsubject areas Parents 77 76 74 79 Teachers 77 73 77 85 Our school does a good job of encouraging parental involvement in educational areas Parents 73 71 82 64 Teachers 80 84 78 70 Our school only contacts parents when there is a problem with their child Parents 55 46 62 63 Teachers 23 18 22 33 Our school does not give parents the opportunity for any meaningful roles Parents 22 18 22 28 Teachers 8 8 12 7 Source: The Metropolitan Life Survey of the American Teacher, 1987
# Enmeshed in nexus of social problems: Odds ratios\* by NALS literacy level

(Literacy-level comparisons of social "failure rates")



NALS literacy level

\*Odds ratios have good statistical properties for group-level differences

# Odds ratios, by health literacy level, for <u>not</u> knowing how to use info to determine:

![](_page_37_Figure_1.jpeg)

# Correlates of *g* variation are highly patterned and predictable

![](_page_38_Figure_1.jpeg)

## Gradients differ systematically by outcome

Correlations with continuous outcomes

correlation with IQ

- Standardized academic achievement .8
- Job performance—<u>complex</u> jobs\*
- Years of education .6
- Occupational level
- Job performance—<u>middle-level</u> jobs\* .4-.5
- Income .3-.4
- Delinquency -.25
- Job performance—<u>simple</u> jobs\* .2

\* Correlations corrected for attenuation & restriction in range

## Gradients differ systematically by outcome

Correlations with continuous outcomes

correlation with IQ

![](_page_40_Figure_3.jpeg)

\* Correlations corrected for attenuation & restriction in range

## Gradients differ systematically by outcome

Correlations with continuous outcomes

correlation with IQ

![](_page_41_Figure_3.jpeg)

\* Correlations corrected for attenuation & restriction in range

# Conversely, SES outcomes function as differentially valid <u>surrogates for g</u>

correlation with IQ

- Standardized academic achievement .8
  Job performance—<u>complex</u> jobs\*
  Years of education .6
  - Occupational level
  - Job performance—<u>middle-level</u> jobs\* .4-.5
  - Income .3-.4
  - Delinquency -.25
  - Job performance—<u>simple</u> jobs\*
     .2

# Still-typical social science assumptions about causes of different ("unequal") outcomes

![](_page_43_Figure_1.jpeg)

### Some corrective facts about causation

![](_page_44_Figure_1.jpeg)

# Social policy has aimed to change this machine

![](_page_45_Figure_1.jpeg)

#### Distribution of g-linked outcomes along the IQ continuum

![](_page_46_Figure_1.jpeg)

Criterion-related outcomes by IQ range

#### 3 thresholds (step functions): "trainability" for military

![](_page_47_Figure_1.jpeg)

### NALS 2 represents another critical level

![](_page_48_Figure_1.jpeg)

#### Associated nexus of social problems

![](_page_49_Figure_1.jpeg)

### Large or small, effects are relentless

![](_page_50_Figure_1.jpeg)

## Odds ratios for social problems, by IQ range

(IQ-range comparisons of social "failure rates")

![](_page_51_Figure_2.jpeg)

### B We live in groups. There is *g*-based social clustering in occupations, schools, neighborhoods, friendships, & marriage

![](_page_52_Figure_1.jpeg)

#### IQ-based clustering across occupations & neighborhoods

![](_page_53_Figure_1.jpeg)

They are spheres of reciprocity & rapport But relations between spheres are vexed

![](_page_54_Figure_1.jpeg)

![](_page_55_Figure_0.jpeg)

![](_page_56_Figure_0.jpeg)

# Moreover, children regress to the mean for genetic reasons

![](_page_57_Figure_1.jpeg)

Expectations, values, quality of help, risks, human capital all differ.

### IQ-contexts are differentially effective cultural conduits, transmission belts

![](_page_58_Figure_1.jpeg)

![](_page_59_Figure_0.jpeg)

Technology makes life ever more complex, putting increasing premium on *g* 

![](_page_60_Picture_1.jpeg)

Higher "accident" rates in poorer neighborhoods: Odds ratios for unintentional deaths, by neighborhood income (1980-86)

![](_page_61_Figure_1.jpeg)

![](_page_62_Figure_0.jpeg)

	Percentil of media:	e <b>n Position</b> Waistons	80 90	100 110	120 128	138	
	(among a adults)	all applied WPT: 1	.0 15	20 25	30 35	40	Occupational practice biorarchy
•	91	Research Analyst				·	Occupational prestige meralicity
.8	88	Editor & Assistant Manager, Advertising Chemist Engineer					<ul> <li>Dominant organizing axis of entire division of labor</li> </ul>
	86	Executive Manager, Trainee Systems Analyst					Same worldwide. Why?
Τ	83	Copywriter Accountant			<u> </u>		• where did it come from?
	81	Manager/Supervisor Manager, Sales			=		Does it have a functional basis?
		Programmer, Analyst Teacher Adjuster					• Could it be different?
.8 ↑ .5	77	Manager, General Purchasing Agent Nurse, Registered		-			Facts from testing claims from 1970s
	70	Sales, Account Exec. Administrative Asst. Manager, Store Bookkeeper		E	Ξ		<ul> <li>Occ prestige tracks mean incumbent IQs, not</li> </ul>
	66	Clerk, Credit Drafter, Designer Lab Tester & Tech.		##			education or income
		Manager, Assistant Sales, General Sales, Telephone Secretary		Ħ			• IQ predicts performance better when jobs are more
	60	Clerk, Accounting Collector, Bad Debt			-		complex
.5		Rep., Cust. Srvc. Sales Rep., Insurance Technician	-				<ul> <li>Ergo, higher level work really does require higher g</li> </ul>
•	55	Automotive Salesman Clerk, Typist Dispatcher Office General	-		-		Proposed explanation for prestige hierarchy
		Police, Patrol Off. Receptionist Cashier	<u>-</u>		-		<ul> <li>A division of labor must accommodate the</li> </ul>
	50	Clerical, General Inside Sales Clerk Meter Reader					constraints imposed by recurring human variation
		Printer Teller Data Entry					<ul> <li>As work tasks were increasingly segregated into more specialized sets (occupations), only those sets survive</li> </ul>
	45	Electrical Helper Machinist Manager, Food Dept. Quality Control Chkr	ΙĘ				for which there was a reliable pool of workers with the
		Claims Clerk Driver, Deliveryman Guard, Security					necessary ability profiles
	42	Labor, Unskilled Maintenance Operator, Machine					<ul> <li>The hierarchical structure of human cognitive abilities determines the frequency of available worker profiles</li> </ul>
	37	Mechanic Medical-Dental Asst.		<b>王</b>			• g is the major axis of cognitive variation across
.2		Production, Factory Assembler Food Service Worker		Ŧ			human populations; secondary axes are weak
	31	Nurse's Aide Warehouseman Custodian & Janitor					<ul> <li>Grouping tasks by g loading proceeded very gradually as tasks were shifted across workers. &amp; vice versa</li> </ul>
	25	Material Handler		_			
	21	Facker		_	14 B		

<ul> <li>.8 Bis Edic A Astistention of Astistentia of Astiste</li></ul>		of media (among a adults) <b>91</b>	n Position WAIS IQ: 8 all applied WPT: 1 Attorney Research Analyst	80 90 100 110 10 15 20 25	120 128 138 30 35 40	C	occupational prestige hierarchy	Y						
98       Examine System       Duties that correlate with job complexity         98       Examine System       Image: State Programmer, Analyst Programmer, Analyst Programer, Analyst Programer, Analyst Programmer,	.8	88	Editor & Assistant Manager, Advertising Chemist			•	• Deminent ergenizing evic of entire division of labor							
<ul> <li>Ba Copputiter Accurate Accurat</li></ul>		86	Engineer Executive Manager, Trainee Systems Analyst Auditor			•	Duties that correlate with	job						
<ul> <li>Manager, Sales programmer, Andryst Adjuster</li> <li>Wanager, General Adjuster</li> <li>Robert, Gred Bookscept Clerk, Gred</li></ul>	Τ	83 91	Copywriter Accountant Manager/Supervisor		<u></u>     		complexity							
77       Adjuster Burchesing Agent Nurse, Registered 20		01	Manager, Sales Programmer, Analyst Teacher		+	•		r	1					
70       Seles, Account Sec.       90         Administrative Assi.       Menager, Store       .86         66       Lab Tester & Techn.       .83         66       Lab Tester & Techn.       .83         70       Assistant       .83         86       Plan       .64         86       Plan       .83         86       Plan       .67         86       Responsibility       .76         1       1       .76       .79         86       Responsibility       .76         1       .83       .86         1       .86       .83         1       .79       .79         1       .70       .79         1       .79       .79         .55       .79       .79         .56       .79       .79         .56       .79       .76         .56       .79       .76         .56       .79       .76         .79		77	Adjuster Manager, General Purchasing Agent Nurse Begistered		Ξ	F	• · · • • · ·	-						
Bookkeeper Clerk, Credition: Dab Tester & Tech. Bookkeeper Clerk, Assistant Sales, General Sales, Tephone Collect, Assistant Collect, Computer Bookkeeper Clerk, Credition: Sales, Tephone Collect, Bad Debt Collect, Structure       Advise       .866         90       Bookkeeper Collect, Assistant Collect, Computer Collect, Bad Debt Collect, Bad Debt Collect, Bad Debt Collect, Structure       .833         50       Bookkeeper Collect, Computer Collect, Typist Collect, Computer Police, Patrol Off. Receptionist Construct       .677         50       Office, Consell Police, Patrol Off. Receptionist Construct       .677         50       Office, Consell Police, Patrol Off. Receptionist Construct       .678         50       Inside Stockerk Manager, Food Dept. Construct       .678         41       Manager, Food Dept. Construct       .678         42       Labor, Poologer, Mechanicat Mechanica		70	Sales, Account Exec. Administrative Asst. Manager, Store		Ξ	•	Compile information	.90						
<ul> <li><sup>66</sup> Manager, Assistant Sales, General Sales, Telephone Secretary Clerk, Accounting Collector, Bad Debri Secretary Clerk, Bad Debri Secretary Clerk, Bad Debri Secretary Clerk, Typist</li> <li><sup>60</sup> Rep., Insurance Technician Automotive Salesman Clerk, Typist</li> <li><sup>61</sup> Police, Patrol Off. Receptionist Cashier Clerkal, General Data Entry Electrical General Soles, Clerk Manager, Food Dept. Clerkal, Souring Clerk, Typist</li> <li><sup>62</sup> Secretary Clerkal, General Soles, Clerk Methor General Data Entry Electrical Helper Methors Clerk, Typist</li> <li><sup>63</sup> Methor General Soles, Clerk Methor General Clerkal, General Soles, Clerk Methor General General Soles, Clerk Methor General General Soles, Clerk Methor General Methor General General Soles, Clerk Methor General General Soles, Clerk Methor General Gene</li></ul>			Bookkeeper Clerk, Credit Drafter, Designer Lab Tester & Tech		-		Advise	.86						
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<ul> <li>.5 60 Rep., Instructore Seles Rep., Instructore Technician Automotive Seles man Clerk, Typist</li> <li>55 Office, General Police, Patrol Off. Receptionist General Clerk Typist</li> <li>50 Inside Seles Clerk Meeter Reader Printer Teller</li> <li>45 Meetering General Clerk Clerk Instruct Inst</li></ul>	.5	60	Secretary Clerk, Accounting Collector, Bad Debt Operator, Computer				Responsibility	.79	S					
Automotive Salesman Cierk, Typist Dispatcher Office, General Police, General Cashier Clarked General Control G			Rep., Cust. Srvc. Sales Rep., Insurance Technician		_	•	Instruct	.70	g					
<ul> <li>Police's Patron Off. Receptionist Cashier Clerkad, General 50 Inside Sales Clerk Meter Reader Printer Teller 0 uside Sales Clerk Manager, Food Dept. Guard, Security 42 Labor, Unskilled Machanic Guard, Security 42 Labor, Unskilled Mechanic Mechanic Mechanic Arc Widder, Die Sett. 37 Messenger Production, Factory Assembler 50 Code/GeodeC Recognize/identify 50 Recognize/identify 50 Specified pace of work26 Repetitive activities 50 Supervision 50 Supervision 50 Supervision 50 Structure 50 Code/GeodeC 50 Recognize/identify 50 Specified pace of work26 50 Repetitive activities 50 Supervision 50 Supervision 50 Structure 50 Structur</li></ul>		55	Automotive Salesman Clerk, Typist Dispatcher Office, General			<u>P</u>	Code/decode	.07						
So       Inside Sales Clerk Meter Reader Printer Teller Data Entry Electrical Helper       Specified pace of work26         45       Machinist Machinist Quality Control Chkr. Quality Control Chkr. Medical-Dental Asst. 37 Medical-Dental	Ť		Police, Patrol Off. Receptionist Cashier			•	Recognize/identify	.00						
<ul> <li>A manager, Food Dept. <i>Guality Control Chkr.</i> <i>Claims Clerk</i> <i>Driver, Deliveryman</i> <i>Guard, Security</i> <i>42</i> <i>Labor, Unskilled</i> <i>Are Welder, Die Sett.</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i> <i>Mechanic</i></li></ul>		50	Clerical, General Inside Sales Clerk Meter Reader Printer				r coognizo/raonary	.00	hore					
<ul> <li>45 Machinist Manager, Food Dept. Quality Control Chkr. Claims Clerk Driver, Deliveryman Guard, Security</li> <li>42 Labor, Unskilled Maintenance Operator, Machine Arc Welder, Die Sett. Mechanic</li> <li>37 Messenger Production, Factory Assembler</li> <li>2 1 Warehouseman</li> <li>31 Warehouseman</li> </ul>			Teller Data Entry Electrical Helper				Specified pace of work	26	vive					
42       Labor, Unskilled Maintenance Operator, Machine Arc Welder, Die Sett. Mechanic       -       Physical exertion      56         37       Messenger Production, Factory Assembler Food Service Worker Nurse's Aide       -       -      73         31       Ware's Aide       -      79		45	Machinist Manager, Food Dept. Quality Control Chkr. Claims Clerk				Repetitive activities	49	the					
<ul> <li>Maintenance Operator, Machine Arc Welder, Die Sett. Mechanic Medical-Dental Asst.</li> <li>37 Messenger Production, Factory Assembler Food Service Worker Nurse's Aide</li> <li>31 Warehouseman</li> <li>31 Warehouseman</li> </ul>		42	Driver, Deliveryman Guard, Security Labor, Unskilled			•	Physical exertion	56	ies					
.2 <sup>37</sup> Medical-Dental Asst. Messenger Production, Factory Assembler Food Service Worker Nurse's Aide <sup>31</sup> Warehouseman <sup>31</sup> Warehouseman			Maintenance Operator, Machine Arc Welder, Die Sett. Mechanic				Supervision	73	es					
.2 Assembler Food Service Worker Nurse's Aide 31 Warehouseman		37	Medical-Dental Asst. Messenger Production, Factory			•	Structure	79						
	.2	31	Assembler Food Service Worker Nurse's Aide			• (	Grouping tasks by g loading proceeded	d very grad	dually					
Custodian & Janitor		3 I 07	Warehouseman Custodian & Janitor Material Haraffer			á	as tasks were shifted across workers, a	& vice vers	sa.					

Percentil	le		
of media	n Position WAISIQ	80 90 100 110 120 128 1	.38
adults)	for WPT: 1	10 15 20 25 30 35	40
01	Attorney		Occupational prestige hierarchy
91	Research Analyst		<u>Occupational prestige meralony</u>
88	Editor & Assistant Manager Advertising		
00	Chemist		• Dominant organizing avia of antira division of labor
	Engineer		• 00
86	Executive		
	Systems Analyst		- 34
	Auditor		
83	Copywriter		
	Accountant Manager/Supervisor		
81	Manager, Sales		
	Programmer, Analyst		
	l eacher Adjuster		
77	Manager, General		
	Purchasing Agent		I Fact
	Nurse, Registered		
70	Administrative Asst.		
	Manager, Store		• OC Social "structure" is a
	Bookkeeper Clark Cradit		
	Drafter, Designer		
66	Lab Tester & Tech.		Crystallized pattern of
00	Manager, Assistant		
	Sales, General Sales, Telephone		l iol recurring activity within a
	Secretary		The recurring detivity within a
	Clerk, Accounting		cort
	Operator, Computer		
60	Rep., Cust. Srvc.		I • Frd
	Sales Rep., Insurance		
	Automotive Salesman		
	Clerk, Typist		Prod Human variation in a shapes and
55	Office General		Human variation in g shapes and
	Police, Patrol Off.		a constrains those patterns and
	Receptionist		I • A d Constrains those patterns, and
	Cashier Clerical General		
50	Inside Sales Clerk		Con hence the cultural "institutions"
50	Meter Reader		
	Printer Teller		• As that emerge from them
	Data Entry		inat energe nom them
	Electrical Helper		
45	Machinist Manager Food Dept		for he
	Quality Control Chkr.		
	Claims Clerk		ned
	Guard Security		
42	Labor, Unskilled		
	Maintenance		
	Arc Welder Die Sett		es e
	Mechanic		
	Medical-Dental Asst.		
37	Messenger Production Factory		bur
	Assembler		- Indi
	Food Service Worker		• Grouping tasks by gloaging proceeded very gradually
31	Nurse's Aide Warehouseman		Crouping tasks by groading proceeded very gradually
	Custodian & Janitor		as tasks were shifted across workers & vice versa
25	Material Handler		do tablo were officer across workers, a vice versa.
21	Packer		

#### Human cognitive variation creates social inequality & group disparities

Ε

![](_page_66_Figure_1.jpeg)

# Racial-ethnic IQ gaps are the rule on unbiased tests

![](_page_67_Figure_1.jpeg)

Disparities largest at the "tails"---leads to much litigation

# g variation yields clockwork-like patterns of effect gradients: Example

- Can predict "disparate impact" in test passing rates in any job or school setting from knowing:
  - Typical IQ distributions of tested groups
  - g loading of predictors
  - Criterion type (technical vs. citizenship)
  - Reliability of predictor and criterion
  - Race-neutrality of scoring
  - Selection ratio

![](_page_68_Picture_8.jpeg)

# g variation yields clockwork-like patterns of effect gradients: Example

- Can predict "disparate impact" in test passing rates in any job or school setting from knowing:
  - Typical IQ distributions of tested groups
  - g loading of predictors
  - Criterion type (technical vs. citizenship)
  - Reliability of predictor and criterion
  - Race-neutrality of scoring
  - Selection ratio

![](_page_69_Figure_8.jpeg)

Lack of racial balance ("disparate impact") constitutes prima facie evidence of Illegal discrimination, so...

Quite predictably, many have used this knowledge to reverse engineer selection procedures to reduce "disparate impact"

- Can predict "disparate impact" in test passing rates in any job or school setting from knowing:
  - Typical IQ distributions of tested groups
  - g loading of predictors
  - Criterion type (technical vs. citizenship) Hire to improve organizational climate, not output

Don't recruit among HS dropouts

- Reliability of predictor and criterion
- Race-neutrality of scoring
- Selection ratio

Hire/promote eveyone or no one

Note: I am not recommending these strategies. Some illegal, & all impinge—predictably—on other goals.

Which illustrates my point: highly predictable *g*-rooted phenomena evoke highly predictable political tensions

Test for personality, not ability Switch to subjective ratings Race-norm test results

## Early crude forecasts

(Gottfredson, 1985)

z scores for IQ range from which most workers are	Prestige	Major IQ range of recruitment (in SB	% of population above minimum IQ ent required <sup>d</sup>		% of population in IQ range <sup>d</sup>		B/W ratio in range range for blacks is 5 same		range for	B/W ratio for % of male workers employed in each occupation*	
recruited <sup>a</sup>	level <sup>b</sup>	metric)¢	B	W	B	W	SD hig	gher range	SD lower	1970f	1980s
0.8+		114+	1.1	23.0	1.1	23.0	.01	.05	.22	e *	
Physician	88	5. J. C.								.23	.30
Engineer	66	: · .	1 .	- 1 - I						.12	.25
0.5 to 2.0	14 - 14 - 1	108-134	3.3	35.2	3.3	32.7	.02	.10	.35		
Secondary teacher	63						e - 1			.59	.59
Real estate sales	48									.18	.23
-0.5 to 1.0	1 × 1	91-117	28.4	74.5	27.8	56.9	.20	.49	.87	÷.,	
Fire fighter	41									.27	.65
Police officer	37					° . A .	×			.69	.87
Electrician	44			1. 1. I.		÷.				.33	.50
-0.8 to 0.7	12	86-112	42.5	83.1	40.8	56.4	.36	.72	1.07		
Truck driver	29									1.59	1.48
Meat cutter	32		* * * *		÷.,					.98	.98
# g-Based constraints on cultural development



#### System-level implications: Carrying capacity



#### System-level implications: Carrying capacity



50%

< IQ 100

#### System-level implications: 5-point rise



#### Current racial differences in carrying capacity



#### Current racial differences in carrying capacity



#### International differences



GNP, rule of law, democracy, political liberty, modernization

(e.g., Lynn & Vanhanen; Rindermann; Whetzel & McDaniel)

## Summary

- Human cognitive diversity is a biological reality with social effects.
- Tasks and environments differ in the degree to which they bring out or expose the cognitive variation in a population, say, in schools.
- The mix of influences that create within-group differences in outcomes ("inequalities") are not necessarily the same as those that create between-group differences ("disparities"). Thus, inferences about the causal power of IQ differences at the individual-level cannot be generalized to the group-level.
- The impact of cognitive variation cumulates and compounds at each higher level of analysis (individual, group, cultural system), making intelligence an increasing deep and profound "fundamental cause" of social-political phenomena at successively higher levels.
- Democratic, egalitarian societies react to intelligence-based inequalities and disparities by trying to eliminate either cognitive variation or its power to create differential outcomes.
- Such attempts provoke countervailing social pressures when they defy the reality of human cognitive diversity.
- The "democratic dilemma"—the trade-off between equal opportunity and equal outcomes—is just one of various third-order effects of the cognitive diversity that exists within and between human populations.

## Thank you.

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