HIGH **LEVEL** ABSTRACTIONS,

(SYNTACTIC)



LEVEL **EXAMPLES** DOMAIN-RELATED GOAL COMMUNICATING RESULTS, DECISION MAKING GOALS SENSEMAKING INFORMATION FORAGING DISTRIBUTED COGNITION KNOWLEDGE CRYSTALLIZATION EXPLORATORY DATA ANALYSIS CONFIRMATORY DATA ANALYSIS SERENDIPITOUS DISCOVERY CROSSING ANALYTICAL GAPS GENERATING INSIGHT CREATIVE PROBLEM SOLVING MID PREDICTING, GENERALIZING, LEARNING, CLASSIFYING **LEVEL** INTEGRATING, SYNTHESIZING, TRIANGULATING TASKS OVERVIEW, ZOOM AND FILTER, DETAILS-ON-DEMAND (SEMANTIC) VIEW COORDINATION: BRUSHING, LINKING, HIGHLIGHTING COMPARING, INTERPOLATING, EXTRAPOLATING VALUES DETERMINING DISTRIBUTION, CORRELATION, CLUSTERING SEARCHING, SORTING, BROWSING COMPUTING VALUES NAVIGATING, PATH FOLLOWING IDENTIFYING / READING VALUES INTERACTING WITH WIDGETS, SELECTING, MANIPULATING OBJECTS MOTOR ACTIVITY: POINTING, SELECTING, STEERING

COGNITION, ATTENTION, MEMORY: 7±2

PERCEPTION OF VISUAL PRIMITIVES, PATTERNS



COGNITIVE-PERCEPTUAL **PSYCHOLOGISTS**

WHO STUDIES?

NONLINEARITY

INDEPENDENT

MOSTLY SEQUENTIAL

CREEPING

LINEARITY

NO/LITTLE

INDIVIDUAL

VARIATION

LINEAR,

SEQUENTIAL, INDIVIDUAL

LARGE INDIVIDUAL VARIATION

INDIVIDUAL

VARIATION

(AT THIS POINT YOU ARE A DOMAIN SCIENTIST)

HOW TO

STUDY

ETHNOGRAPHIC FIELD STUDIES

> INTERVIEW STUDIES

M.I.L.C.S, INSIGHT-BASED DIARY STUDIES DEPLOYED **PROTOTYPE**

ARTIFACT ANALYSIS STUDIES (LOG FILES)

FULLY-**FUNCTIONAL** PROTOTYPE

HOW TO

SUPPORT

DOMAIN-

SPECIFIC

WORKFLOWS

PRODUCTION-

LEVEL

TOOL(S)

INSIGHT-BASED LAB STUDIES SINGLE-FEATURE

TIME & **ERROR** LAB STUDIES

THINK-ALOUD,

GOMS LAB STUDIES

NON-INTERACTIVE **PROTOTYPE**

STIMULI

(INTERACTIVE)

PROTOTYPE

CONTROLLED LAB STUDIES

EYE TRACKING, PHYSIOLOGICAL **SENSORS**

SIMPLE VISUAL

NONLINEAR, DOMAIN DOMAIN PARALLEL SPECIFIC **SCIENTISTS** (COLLABORATIVE?) CRISP COGNITIVE FUZZY **SCIENTISTS** INTERDOMAIN ISOMORPHISMS DIFFICULT VISUAL ANALYTICS RESEARCH INTERDOMAIN MACHINE LEARNING ISOMORPHISMS & AUTOMATION RESEARCH **POSSIBLE** VISUALIZATION INTERFACE **DESIGN STUDY** RESEARCH INDEPENDENT MAPPING DOMAIN ABSTRACTIONS INTERACTION DESIGN RESEARCH VISUAL ENCODING DESIGN RESEARCH ALGORITHM DESIGN RESEARCH INTERFACE HUMAN FACTORS SPECIFIC HCI RESEARCH DOMAIN

SPECIFICITY