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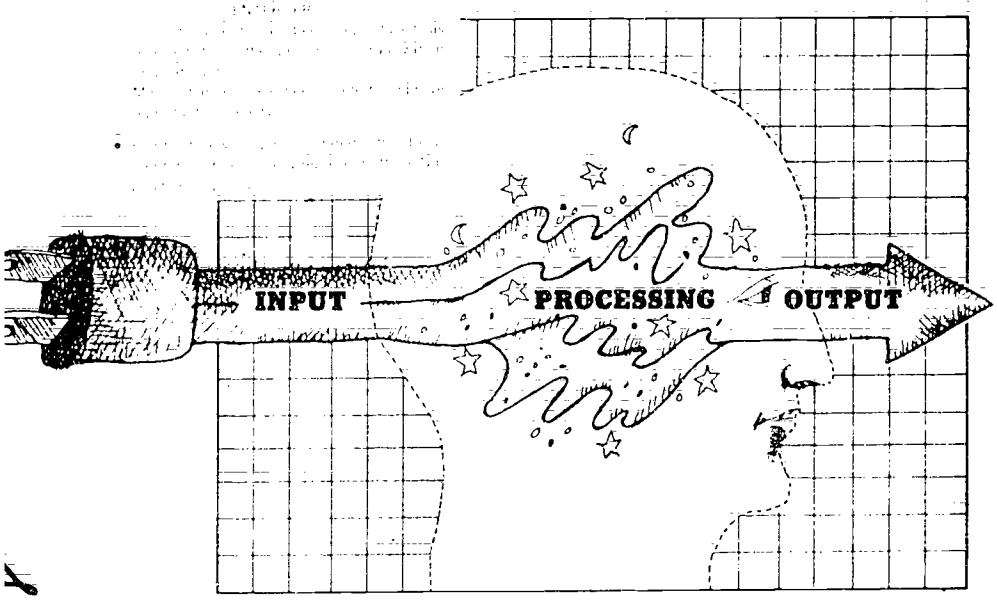
ABSTRACT

The booklet describes approaches to teaching learning disabled students introductory physical anthropology, as related by a professor involved in the Higher Education for Learning Disabled Students (HELDS) program. The author suggests ways to identify LD students through observation of short attention span, restlessness, and marked discrepancies between listening and reading performance. Adaptive strategies (such as incorporating tactile learning and game playing) and classroom hints are offered. Testing suggestions include allowing the option of oral exams and proviting more time to respond to questions. In addition to a course syllabus, appended information also includes a sample test and suggestions for audiovisual materials. (CL)

BARE BONES: AN INTRODUCTION TO PHYSICAL ANTHROPOLOGY

by
Catherine J. MacMillan Sands



THE HELDS PROJECT SERIES
CENTRAL WASHINGTON UNIVERSITY

BARE BONES: AN INTRODUCTION TO PHYSICAL ANTHROPOLOGY

Alternative Techniques for Teaching Physical Anthropology to Learning Disabled Students in the University

by
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HELDS Project
(Higher Education for
Learning Disabled Students)

Instructional Media Center
Central Washington University
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Prefaces:

THE HELDS PROJECT AT CENTRAL WASHINGTON UNIVERSITY

The acronym HELDS stands for Higher Education for Learning Disabled Students. It represents a model program funded for three years (1980-1983) by the Fund for the Improvement of Post Secondary Education (FIPSE), a division of the Department of Education. This project was funded as a model for other colleges and universities that are preparing to provide equal academic access for the learning disabled students.

Project HELDS had three major focuses. The first was to provide such access for the learning disabled student under Section 504 of the Rehabilitation Act of 1973. This we did for learning disabled students, most of whom were admitted without modified requirements to Central Washington University. These students were not provided remedial classes. They were enrolled in classes with other college students. The help that we gave was habilitative, rather than remedial, teaching them how to compensate for their weaknesses.

The habilitative training began with identification of those who were learning disabled and included, but was not limited to, such support services as taped textbooks (provided through the services of our Handicapped Student Service Coordinator), readers, writers for tests, extended time for tests, pre-registration with advising to ensure a balanced schedule the teaching of study skills and tutoring by tutors from the campus-wide tutoring program who were especially trained to tutor learning disabled students.

The second focus of the project was to give a core of twenty faculty teaching classes in the basic and breadth areas a sensitivity to the characteristics of students who were learning disabled so that they could modify their teaching techniques to include the use of more than one modality. This ensured an academic environment conducive to learning for the LD. The faculty members participated in monthly sessions which featured experts in the field of learning disabilities, and in the area of the law (Section 504) that deals with the handicapped student and higher education. There were several sessions in which Central Washington University graduates and currently enrolled LD students shared their viewpoints and experiences with the faculty members. As a result of this some faculty members used the students as resource people in developing curricula for their various disciplines published in this series.

The third focus of the project was to make the university community aware of the characteristics of learning disabilities and of the program at Central. It also sought to encourage other colleges and universities to initiate such programs.

WHAT IS A LEARNING DISABLED STUDENT?

People with learning disabilities have handicaps that are invisible. Their disability is made up of multiple symptoms that have been with them since childhood. Many of them have been described as "dyslexics," but if they are categorized as dyslexic, this will be only one of their many symptoms, as a sore throat is only one of the many symptoms of a cold.

Three concise descriptions of the learning disabled children are provided in Hallahan and Kauffman:

> "The National Advisory Committee on Handicapped Children (1968) proposed the following definition, which was adopted by the 91st Congress:
>
> > Children with special disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written thinking, talking, reading, writing, spelling, or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual, hearing, or motor handicaps, to mental retardation, emotional disturbance, or to environmental disadvantage.
>
> Task Force II of a national project (Minimal Brain Dysfunction in Children: Educational, Medical and Health Related Services, Phase Two of a Three-Phase Project, 1969) wrote the following two definitions:
>
> > Children with learning disabilities are those (1) who have educationally significant discrepancies among their sensory-motor, perceptual, cognitive, academic, or related developmental levels which interfere with the performance of educational tasks; (2) who may or may not show demonstrable deviation in central nervous system functioning; and (3) whose disabilities are not secondary to general mental retardation, sensory deprivation or serious emotional disturbance.
> >
> > Children with learning disabilities are those (1) who manifest an educationally significant discrepancy between estimated academic potential and actual level of academic potential and actual level of academic functioning as related to dysfunctioning in the learning process; (2) who may or may not show

demonstrable deviation in central nervous system functioning; and (3) whose disabilities are not secondary to general mental retardation, cultural, sensory and/or educational deprivation or environmentally produced serious emotional disturbance.[1]

Although the preceding definitions are concerned with children, the President's Committee on Employment of the Handicapped, in their booklet *Learning Disability: Not just a Problem Children Outgrow*, discusses LD adults who have the same symptoms they had as children. The Department of Education (Reference Hallahan & Kauffman) says that two to three percent of the total public school population are identified as learning disabled and that there are over fifteen million unidentified LD adults in the United States, acknowledging, of course, that people with this problem are not restricted to the United States but are found all over the world.

We know that many learning disabled persons have average or above average intelligence and we know that many of these are gifted. In their company are such famous gifted people as Nelson Rockefeller, Albert Einstein, Leonardo da Vinci, Thomas Edison, Hans Christian Anderson, Auguste Rodin, William Butler Yeats, and Gustave Flaubert.

The causes of learning disabilities are not known, but in our project each of our identified learning disabled students shows either an unusual pregnancy (trauma at birth, such as delayed delivery, prolonged or difficult delivery) or premature birth. They oftentimes have a genetic family history of similar learning disability problems.

An exerpt from my *Criterion and Behavioral Checklist for Adults With Specific Learning Disabilities* has been included as Appendix A.

s/ MCS
6 June 1982
Ellensburg, Washington

[1] Daniel P. Hallahan and James M. Kauffman *Exceptional Children* (Englewood Cliffs, New Jersey, Prentice Hall, 1978) pp. 121-122

I: INTRODUCTION

Whether you are aware or unaware of learning disabilities, one thing is for certain — there are no two learning disabled students who are alike. Just as each student looks different, they are distinct in their handicap. I have gained an appreciation of some of the hardships these students endure and a genuine interest in some of the unique problems they have carried with them through their earlier schooling. Once you get acquainted with a few of these young men and women on our campus you cannot but admire their courage and tenaciousness. As yet, we know little about the learning disabled. Unfortunately, there is still much debate over the causes of, and the severity of, particular manifestations.

The American institutions of higher education are just now coming to grips with this problem. Central Washington University may be among the pioneers in attempting to assist professors who are increasingly coming into contact with students who are intelligent but who fail to perform well for one reason or another. Historically there are several definitions for learning disabilities. Historically there have been no manuals published on how to teach the learning disabled.

Thus, as an anthropologist trying to contribute to human understanding I do not pretend to be an expert in the field of the learning disabled. What I have to offer in this booklet are ideas that I have employed and which seemed to have worked for some students. Each of these students is "special" because of a different set of problems. There are not any pat answers. Some of the students you try hardest to help will disappoint you and let you down. Learning disabled students should not be given a lower set of standards than you would normally have for your class. If they fail, they fail. If they make it, they are proud, and so well may you be.

I entitled this booklet *Bare Bones* for a couple of reasons. First, because hopefully this introduction to how to teach Introductory Physical Anthropology to the learning disabled is the skeletal structure. When we are wiser and more thoughtful tomorrow, the tendons, muscles and nerves will develop at an accelerated rate; and secondly, and in a more humorous vein, it is because I insist that all beginning Physical Anthropology students learn skeletal anatomy. I make no bones about it! They all own a set and regardless of whether they continue on enrolling in other anthropology courses or not, a real appreciation of the mechanics and the beauty of the structural engineering job God produced is worthy of study.

II: IDENTIFYING THE LD STUDENT

Is it not the task of the anthropologists to identify and measure the differences we detect in the human world? Is it not our task to seek to iden-

by those among us that are strikingly different and often misunderstood? Learning is a dimension of Homo sapiens sapiens. It is inherent in all human biological beings. It is an important ingredient in any individual's personality development, self concept, and mental health. The ability to learn enables us to participate in society, hold jobs, manipulate our environment, make adaptations and negotiate a settlement. We are not all alike in our ability to learn, however. For some, the ordinary, so-called "tried and true" methods do not work well. For those individuals are often never identified as being learning disabled. Somehow some circuitry got fouled and as a result these individuals suffer from an inability to learn like others do.

What are the signs of such a disability? They are numerous. (see Appendix A) Have you ever had a handwritten student paper that you were incapable of reading? Have you had papers where four spellings for the same words appear on the same page? Have you ever had a student respond to three written questions while the remainder of the class finished fifty in the same length of time? If you recognize any of these idiosyncracies in your students, you may well be dealing with an LD, a learning disabled person. They are not what they may appear to be. They are not unintelligent, nor lazy. They just need a fresh approach to learning material and evaluation devices. Disease can be treated — can be cured — and perhaps made to disappear entirely. Disabilities, however, are unlike other problems that can plague an otherwise normal individual. They are not transitory. Some individuals who suffer from disabilities are never diagnosed, some muddle through, others silently sing "We Shall Overcome." It is this latter group, those that dare to apply for university admittance that we should turn our attention to, identify and measure. Hopefully this booklet is the first, but not the last, of its kind on our "search and rescue" mission.

New methods are needed and can be creatively devised to help students achieve course objectives. That means each of us discovering what works best in each course and in some cases what modality achieves desired results for a student with a particular type of learning disability. It means flexibility, it means accommodation, and above all else, it means being perceptive.

At this juncture you may be thinking that they cannot possibly create a new modality for each and every learning disabled student who happens to be lucky enough to enroll in an Introductory Physical Anthropology course. Right you are! Nevertheless, each new learning approach is guaranteed to help students in general and the learning disabled in particular. In other words, no trial method of teaching a subject is lost. There are some problems that you cannot do anything about. Expect that to happen. I once had a very bright, conscientious young woman who came to my office in tears. After I passed out the Kleenex and gave her several moments to compose herself, she told me that she never knows when she is about to cry. After that visit whenever she broke out in tears during one of my lectures or in the middle of a test I understood, I empathized, but

there was nothing I could do to remedy the situation.

How do you begin? First attempt to judge those sections of your course where student performances has taken a dip, where you know that the amount learned was not satisfactory. Try to ascertain how that material might more effectively have been presented.

Example:

I have found that the students are very aware of film production dates. Some of them read *Science* magazine, *National Geographic*, *Natural History*, etc. and those individuals are aware of outdated material or passé theories, etc., as presented in some of the older movies. Unless you continually update your lecture material keeping up with the last paleontological discoveries of the Leakeys and Johanson the students will be bored, quit attending, or fall asleep. If you have to use outdated films like I do — use them in a historical sense.

Dr. Marjorie Hoachlander[1] offered the following things to consider:

1. Does the information need to be updated? If so, what is the most recent source?
2. Is the information to be presented task-oriented or conceptual?
3. Does the content need more illustration? If so, should it be visual or auditory? (I would add tactile also.)
4. Would listening be more helpful than reading or viewing?
5. Is it essential that the subject matter be the same, regardless of format chosen?
6. Should students receive this alternative experience in a group or individually? In class, in a library (lab?) or somewhere in the community? (parentheses mine)

Dr. Hoachlander suggests two main sources which will be of assistance and save countless hours.

1. The *Educational Media Yearbook* — edited by James W. Brown and published by R.R. Bowker.
2. Two major organizations that can provide information are the Educational Resources Information Center (ERIC) and the National Information Center for Educational Media (NICEM)

Among others, two of the signs of an LD student are a short attention span and restlessness. When these two are coupled with a marked discrepancy between what is understood when listening as opposed to

[1] Marjorie Hoachlander, *What Nonprint Materials Can Do For You in College Teaching*. College Media Committee of the Association of America Publishers, and The Association of Media Producers. Distributed by Prentice Hall Film Library, Englewood Cliffs, New Jersey

[illegible] you have a whopper of a problem (see Appendix A). Excuse me: I have the problem! You have to learn how to help them. And some [illegible] help!

[illegible] included a copy of a syllabus (Appendix B) for my course [illegible] believe that rules must be made, test dates set, grading standards established at the beginning of each new quarter. You will note that the syllabus contains monthly calendars for the students to tack onto [illegible] boards, or carry with them, etc., as a handy reference. Chapters to [illegible] test dates and lab periods are sketched in by the week. The first [illegible] of class these are given to the students. I allow them time to read [illegible] and then I go over them orally. The LD students who are oral [illegible] and those other problems are encouraged to pay particular atten-

ADAPTIVE STRATEGIES

Tactile Learning

[illegible] students benefit from handling laboratory materials, but I have found that it is especially meaningful to students with impaired vision and those who do not readily learn from two dimensional illustrations. Hand a student a femur, explain the function of ball and socket joints and [illegible] joints. It should become immediately apparent to the student [illegible] which is proximal and which is distal. The student has learned by tactile exploration as well as verbal instruction. This helps those students [illegible] visual difficulties and are more auditory or tactile learners. (See Appendix A).

It has also proven useful to discuss cuts of meat that the students are familiar with, i.e., pot roast -- a ring bone is a cross section of a femur. I [illegible] how delicious marrow is and how the ordinary dog will eat it with [illegible] relish, and discard the bone. Why? The femur, being one of the strongest bones in the body, cannot be consumed because of the hard-[illegible] of the compacta (outer bone) cells. This often drives home the point that usually only the hardest bones will survive the dinner of a predator or [illegible] consumer. The fossil record abounds with some bones and rare-[illegible] with others. As an example consider the increase in knowledge gained [illegible] because of the almost complete skeleton known popularly as "Lucy." After students grasp these ideas the required text material becomes [illegible] meaningful.

The use of modeling clay that can be hardened in an ordinary oven is a [illegible] experience for some students. Assign them the task of modeling an [illegible] australopithicine or a baboon skull.

Game Playing

1. How to remember the difference between hominid and hominoid? It is useful to talk about the *ids* and the *oids*. *Id* is two letters. It also contains two categories of animals. Whereas *oid* is three letters and it contains three groups. Now we turn to the *noids* and the *coids*. Whether it is up down or down up — the body has cora*noid* cor*acoid*, cora*noid*. Mandible, scapula, humerus—*noid*, *coid*, *noid*. Once again, these little verbal games are what help all students but especially the learning disabled. Repetition, repetition, repetition. Distinguish between tibia *and fibula*? A little lie is a fib. The smallest bone in the leg is the fibula. These are but a few of the ways students learn material that is difficult for some, and seemingly impossible to others.

2. One LD student, in need of some extra help, was given the following assignment: Describe one minute of a boxing match, using only anatomical terminology. Ex.: A right jab to the mandible and a left to the Xiphoid process, etc.

Testing

Learning disabled students can be tested in a variety of ways such as the following:

1. Ask the student to bring a friend to the exam. Give the student and friend a copy of the exam. Allow the friend to read the test questions to the learning disabled student.

2. Give the student the option of taking an oral test. This should be given in the privacy of your office. "Tell me what you know about microevolution." Etc. You may not like giving extra time (office time) to these students but it is rewarding to both of you.

3. Allow the learning disabled students more time to respond. Some of them are very slow readers and writers but do perform well if given some additional time. (See Appendix A). (See Appendix C for ordinary test.)

4. The anagram (Appendix C) helps the poor speller. It visually divides the letters and they get additional help because I have included one letter in its correct position.

5. Make certain the print of the examination is clear and contrastive. When asked, some of these students reply that colored test paper is preferable. A sample test kept in your office for reference should do the trick. Ask the learning disabled student which colored test is easiest for them to read. Try to use that color for the student throughout the quarter.

6. Researchers have proof that students rarely answer the first question first; they begin on 2, 3, 5 or wherever they are most comfortable. They have also found that test scores improve dramatically if you use the easiest questions to begin with then graduate them in difficulty; ending with the most difficult.

Classroom Hints

1. For some students with reading difficulties, brown and green chalkboards are problems. They may be easier for most students to read because they are low contrast but that causes difficulties for their fellows.
2. Write key phrases and terms on the chalkboard. Read them and explain them.
3. Handing out a set of key terms by chapter is also helpful.
4. Handing out a list of Greek and Latin morphemes is very helpful. Ex: di = 2, morph = form (sexual dimorphism) geo = land, (geomorphology) etc., etc., etc. (See Appendix E).
5. The use of overhead transparencies and movies as audiovisual aids are important and should be chosen for clarity and interest.
6. After the first three or four weeks of the term give the students a class critique to fill out. You may find that if you have asked the right question you will become aware of some distracting or annoying habits you have developed.
7. Have your text tape recorded for easy access.

How About This?

A new device has recently crossed my desk which I plan on incorporating. Adrienne Zihlman's *Human Evolution Coloring Book*, Harper Row Publishing Company is very well conceived, not too expensive, and very thorough. I tried it, I liked it, I will use it.

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APPENDICES

APPENDIX A

Criterion and Behavioral Checklist for Adults with Specific Learning Disabilities

1. Short attention span.
2. Restlessness.
3. Distractability. (The student seems especially sensitive to sounds or visual stimuli and has difficulty ignoring them while studying.)
4. Poor motor coordination. (This may be seen as clumsiness.)
5. Impulsivity. (Responding without thinking.)
6. Perseveration. (The student tends to do or say things over and over. Mechanism that says "finished" does not work well.)
7. Handwriting is poor. (Letters will not be well formed, spacing between words and letters will be inconsistent, writing will have an extreme up or down slant on unlined page.)
8. Spelling is consistently inconsistent.
9. Inaccurate copying. (The student has difficulty copying things from the chalkboard and from textbooks; for instance, math problems may be off by one or two numbers that have been copied incorrectly or out of sequence.)
10. Can express self well orally but fails badly when doing so in writing. In a few cases the reverse is true.
11. Frequently misunderstands what someone is saying. (For instance, a student may say, "What?", and then may or may not answer appropriately before someone has a chance to repeat what was said previously.)
12. Marked discrepancy between what student is able to understand when listening or reading.
13. Has trouble with variant word meanings and figurative language.
14. Has problems structuring (organizing) time -- The person is frequently late to class and appointments; seems to have no "sense of how long a "few minutes" is opposed to an hour; has trouble pacing self during tests.

15. Has problems structuring (organizing) space -- The student may have difficulty concentrating on work when in a large, open area -- even when it's quiet; may over or under-reach when trying to put something on a shelf (depth perception).

16. Has difficulty spacing an assignment on a page, e.g., math problems are crowded together.

17. Thoughts -- ideas wander and/or are incomplete in spoken and written language. Student may also have difficulty sequencing ideas.

18. Sounds -- A student's hearing acuity may be excellent, but when his brain processes the sounds used in words, the sequence of sounds may be out of order: e.g., the student hears "aminal" instead of "animal" and may say and/or write the "aminal."

19. Visual selectivity -- May have 20/20 vision but when brain processes visual information, e.g., pictures, graphs, words, numbers, student may be unable to focus visual attention selectively; in other words, everything from a flyspeck to a key word in a title has equal claim on attention.

20. Word retrieval problems -- the student has difficulty recalling words that have been learned.

21. Misunderstands non-verbal information, such as facial expressions or gestures.

22. Very slow worker -- but may be extremely accurate.

23. Very fast worker -- but makes many errors and tends to leave out items.

24. Visual images -- Has 20/20 vision but may see things out of sequence, e.g., "frist" for "first," "961" for "691." Or, a student may see words or letters as if they are turned around or upside down: e.g., "cug" for "cup," or "dub" for "bud," or "9" for "E" for "7," etc.

25. Makes literal interpretations. You will have to have them give you feedback on verbal directions, etc.

26. Judges books by their thickness because of frustration when learning to read.

27. Has mixed dominance: e.g., student may be right handed and left eyed.

28. Moodiness. Quick tempered, frustration.

29. Cannot look people in the eyes and feels uncomfortable when talking to others.

30. Has trouble answering yes or no to questions.

Students with specific learning disabilities which affect their performance in math generally fall into two groups:

1. Those students whose language processing (input and output) and/or reading abilities are impaired. These students will have great difficulty doing word problems; however, if the problems are read to them, they will be able to do them.

2. Those students whose abilities necessary to do quantitative thinking are impaired. These students often have one or more problems such as the following:

A. Difficulty in visual-spatial organization and in integrating nonverbal material. For example, a student with this kind of problem will have trouble estimating distances, distinguishing differences in amounts, sizes, shapes, and lengths. Student may also have trouble looking at groups of objects and telling what contains the greater amount. This student frequently has trouble organizing and sequencing material meaningfully on a page.

B. Difficulty in integrating kinesthetic processes. For example, a student will be inaccurate in copying problems from a textbook or chalkboard onto a piece of paper. The numbers may be out of sequence or the wrong numbers (e.g., copying "6" for "5"). Problems may be out of alignment on the paper. Graph paper is a must for them.

C. Difficulty in visually processing information. Numbers will be misperceived: "6" and "9," "3" and "8" and "9" are often confused. The student may also have trouble revisualizing, i.e., calling up the visual memory of what a number looks like or how a problem should be laid out on a page.

D. Poor sense of time and direction. Usually, students in the second group have the auditory and/or kinesethic as their strongest learning channels. They need to use manipulative materials accompanied by oral explanation from the instructor. They often need to have many experiences with concrete materials before they can move on successfully to the abstract and symbolic level of numbers.

APPENDIX B

A110 Intro to Physical Anthropology
Spring 1981
C.J. Sands
5 Credits

Office: 339 INSB
Office Phone: 963-3601
Office Hours: 10 a.m. Daily
or by Appointment

TEXT REQUIRED: *Human Biology and Behavior: An Anthropological Perspective*, 2nd Edition • Mark Weiss and Alan Mann

Introduction to Physical Anthropology exposes you to the historical background and modern theory of man as a physiological being. The course includes topics such as genetics, the primate, both human and non-human, physical variability and adaptation, fossil man, microevolution, social problems which are concerned with the future, etc.

Physical Anthropologists study mankind from several vantage points, the past, the present, and attempt to answer questions about human evolution. The ability to learn, what we learn, the questions we are able to answer can all determine the future outcome of mankind.

Attached to this cover sheet you will find a three month calendar for laboratory schedule, test dates, holidays, etc. Please use it to your advantage.

As you will note there are five examinations. These five examinations cover material from lectures, movies, and your textbook. There are also two other examinations — both covering materials from laboratory sessions. These will be (see May) at the close of the quarter.

Mr. John Savage, graduate student, is the Teaching Assistant for this class. He also will have regularly scheduled office hours. If you are in need of assistance please contact him or come in and see me.

RULES:

1. I will not tolerate whispering during lectures and movies. It disturbs the class. Please save discussions for after class.
2. If you are ill and need to miss a quiz I need to be notified ahead of time. Call 963-1515 Office of Dean of Student Development. They will notify all of your professors that you are ill, jailed, kidnapped, etc.
3. I do not *drop* your lowest quiz score.

4. Expect pop quizzes. Scores on these add to your total grade points.
5. I do expect that you will be in daily attendance at class, properly attired. (I am already well acquainted with human anatomy and do not need to see yours.)
6. Try to be punctual. If you are going to be habitually tardy — be courteous enough to explain why (fractured ankle, 10 months pregnant, swim class prior to Anth 110).
7. If you realize that you are not doing well in this course after about the 2nd quiz, come and seek some help. Call me 3-3601 and make an appointment.
8. I will give a make-up quiz if you are on a team trip, a band tour. I must have a note from your coach or director.
9. I am here to help you; do not hesitate to drop in and chat if you are having some personal or academic concerns.
10. If you make an appointment with Mr. Savage or me, do not be late. If you must cancel an appointment call the Anthropology Secretary (3-3201) and give her the message.
11. The Final is *not* comprehensive in nature.
12. To complete the course you *must* have satisfactorily finished all laboratory assignments. You may make them up only if you have been ill or for some other serious reason. I must be notified ahead of time for permission.

Have a good quarter — I hope you all do your very best and remember that what you put in your head is yours alone for all time. Learn how to think — not what to think.

GRADING SCALE AND SYSTEM

Each exam is worth 50 pts. Bonus questions are on trivia. Somewhere in life you should expect to be rewarded for remembering things.

50 X 5 = 250 pts. plus Bonus Answers
@5 pts. per test = 275 Total pts. possible.

Lab exams (1 practical and 1 written)
@ 50 pts. each = 100

375 Total points possible for quarter.

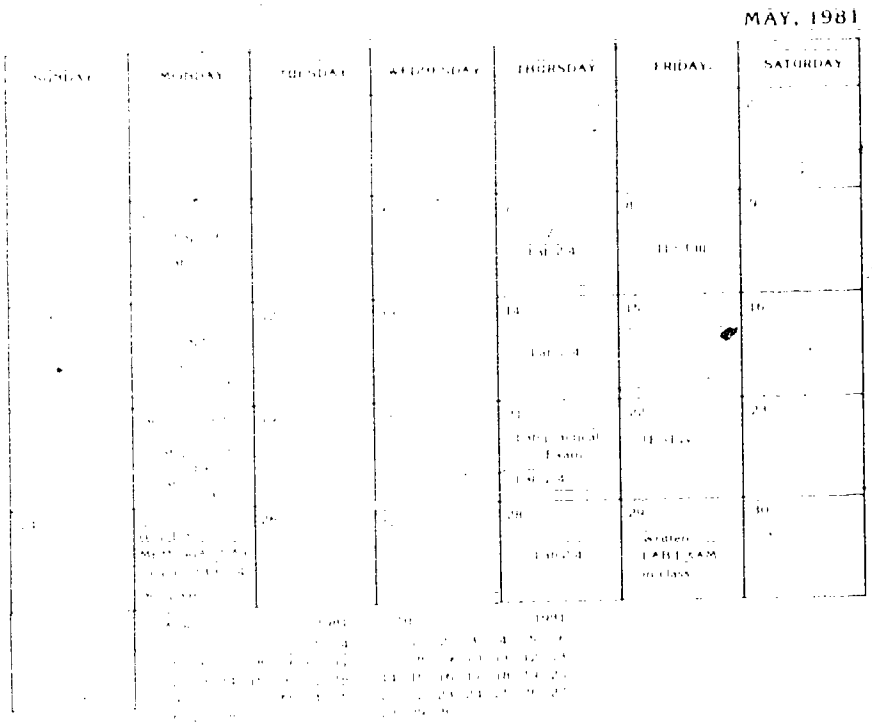
Pop quiz scores will *add in but not be deducted* from your grade.

Each pop quiz will be worth 15 pts.

Total points earned		Final Grade
375-360		A
359-339	=	A-
338-315	=	B+
314-295		B
294-274	=	B-
273-253	=	C+
252-228	=	C
227-190	=	C-
189-160	=	D+
159-130		D
129-80	=	D-

APRIL, 1981

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY


MAY, 1981
SUNDAY
MONDAY
TUESDAY
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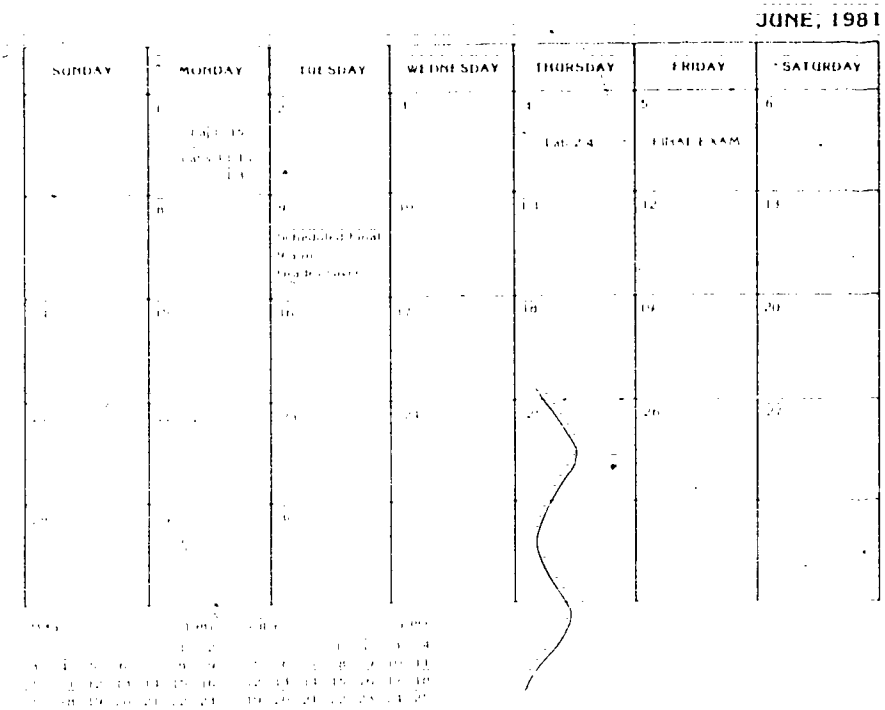
THURSDAY
FRIDAY
SATURDAY


JUNE, 1981
SUNDAY
MONDAY
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SATURDAY
FINAL EXAM

APPENDIX C

A110 INTRO TO PHYSICAL ANTHROPOLOGY
Final Exam
C.J. Sands
Summer 1981

NAME _____

I. Multiple Choice. 3 pts. each.

____1. Which of the following is least influenced by the environment:

a. skin color
b. eye color
c. blood type
d. intelligence

____2. Skin color:

a. affects susceptibility to skin cancer: those with lighter skin have a lower incidence of skin cancers
b. is probably controlled by only one gene
c. varies according to the amounts of four different pigments present in the lower layers of the epidermis
d. affects ability to synthesize vitamin D, so that those with dark skin are less susceptible to hypervitaminosis D, and those with light skin are less susceptible to rickets

___3. Traits of complex inheritance:

a. usually are not affected by climatic and environmental differences
b. are usually externally visible traits whose variation can form the basis for assortative mating
c. are almost all controlled by one gene locus
d. are non-polymorphic traits

__4. Heritability:

a. estimates how much variation between two populations is genetic and how much is environmental
b. estimates how much of the variation in a trait, within one population, is due to genetic differences between individuals
c. is easier to determine for humans than for laboratory

animals

d. measures how many gene loci are involved in the genetic component of any given trait

5. The tendency for adolescents in the U.S. to reach puberty earlier and to grow taller than their parents or grandparents is an example of:

a. the secular trend

b. mixed-longitudinal studies

c. heritability (h^2)

d. assortative mating

6. While Jensen and others argue that racial differences in intelligence are 20-80% genetically determined, we must note that:

a. since these estimates are based on scientifically controlled twin studies, they must be accurate

b. heritability measures only apply to differences between populations, not between individuals within populations.

c. studies show that changes in education, diet, and affection can change I.Q. scores by more than the 15-point average difference between Blacks and Whites

d. only 20% of the population are twins but 80% are intelligent

7. The most accurate statement concerning the effects of overcrowding stress on humans is:

a. crowding has no biological effect on humans

b. crowding has been proven to have serious long-range effects on physiology and behavior

c. humans show none of the adrenal responses detected in other animals

d. humans show some biological responses to crowding stress, but long range effects are uncertain

8. In adapting to temperature stress:

a. humans do not follow Bergmann's or Allen's rules since cultural factors are more important

b. humans do generally follow Bergmann's and Allen's rules

humans tend to be short and stocky in deserts as a response to the stresses of dry heat

d. there are no genetic adaptations to temperature stress in humans, only physiological and cultural adaptations

Some of the problems associated with a diet low in calories and protein are:

a. Brain retardation and reduced resistance to disease

b. inadequate vitamin C production and rickets

c. kuru and scurvy

d. color blindness and reduced night vision

Adaptations by Quechua Indians to high altitude stress do not include:

a. early marriage and childbearing

b. larger lung size

c. smaller brains requiring less oxygen

d. a more efficient means of supplying oxygen to body tissues

Lactase deficiency:

a. is the inability of some women to lactate after childbirth

b. is a relatively rare polymorphism found in 5% to 20% of some Asian and African populations

c. is caused by bacteria present in unpasturized milk

d. is the inability of most adult humans to digest milk sugar

Non-infectious diseases:

a. include paralytic polio and colostrum deficiency

b. have overtaken infectious diseases as major causes of death in the U.S.

c. are defended against by the body's immune system

d. are caused by genetically-based deficiencies in ACTH and thus in glucocorticoi

The clinal approach to human variation:

a. divides the world into a number of geographical races

b. assumes that drift is a major force in human evolution

c. is a means of indicating geographical variation in one or more specific genetic traits

d. concludes that traits vary according to standard racial classifications

14. The concept of typological race implies:

a. that there is a great deal of variation within each race

b. that a great deal of gene flow and migration have occurred throughout human history

c. that one race will be almost identical to others

d. that most people within a race will be similar to each other in a variety of traits

15. In studying human variation, anthropologists and biologists:

a. find that variation occurs between static racial groups

b. find that breeding patterns, and not racial groups, are the crucial factors in human evolution

c. conclude that most variability occurs among three major races

d. conclude that both phenotypic and genetic traits vary along the boundaries of three major and many minor races

16. Comparisons between American Indian and Oriental populations:

a. show a high degree of similarity in the frequencies of a number of traits

b. show that the two groups are identical in genetic traits

c. prove that the Americas could not have been settled by Asiatic populations

d. are impossible, since we do not have enough data on trait distribution among Asiatic populations

17. [illegible] objected to the use of [illegible] concept [illegible]

a. [illegible]

b. races have no biological reality

c. the race concept is not typological enough

d. race is a politically "loaded" concept

18. North and South America were most likely peopled by:
    a. Asians crossing a Bering Straits land bridge about 20,000 years ago
    b. neanderthals who migrated 75-100,000 years ago and evolved into American Indians
    c. stone-age Japanese fisherman who navigated by the stars and winds
    d. clinally variable races descended from hypothetical neanderthal populations

19. Human aggression:
    a. is the result of hormonal action and is genetically determined by a locus on the Y chromosome
    b. results from frustration whenever we cannot hunt and kill big game animals
    c. is less ritualized in humans than in some other animals; that is, individual and cultural responses vary under similar conditions
    d. results from australopithecine hunting, as proven by extensive evidence from South and East Africa

20. All humans:
    a. live in social groups, but of different types
    b. live in social groups of similar size and organizational type
    c. live in social groups that are the same as those of savanna baboons
    d. have lived in social groups for the past 10,000 years

21. Juvenile primates learn:
    a. by being punished severely for inappropriate behavior the first time they occur
    b. by imitating adult behaviors in peer play groups
    c. by being consciously taught by adults, and rewarded for learning correctly
    d. by extended demonstration sessions, with one adult teaching one juvenile

22. Medical treatment of symptoms of genetic diseases:
    a. is a cultural behavior that changes gene pool composi-

tion

b. has no effect on the gene pool, since those with genetic diseases do not live past puberty, even with treatment

c. is clearly maladaptive, since persons with genetic diseases are less fit in any environment possible

d. changes the gene pool by changing the genetic makeup of the person with the disease.

23. The interaction of biology and culture can be best stated as:

a. human genetic heritage determines the cultural behaviors we adopt

b. human cultural practices change our environment, and thus determine evolutionary genetic changes

c. genetics, culture, biology, and environment all interact in a dynamic feedback network

d. since culture is learned behavior, with no genetic basis, culture cannot change genetics

24. XYY males:

a. make up 50% of all violent criminals

b. are males who have had sex-change operations to become females

c. are proven to have two genes for aggression and only one for passiveness

d. are disproportionately incarcerated in security hospitals and prisons

25. Which form of marriage did Wilson mention as the best way of insuring passage of one's genetic material for both males and females? (Film: Sociobiology)

a. monogamy

b. sororal polygyny

c. fraternal polyandry

d. bigamy

BONUS QUESTIONS. 1 pt. each answer:

a. With *one exception* every state in the union whose name starts with an A ends in an A. And with *one exception* every country in the world whose name begins with A ends in an A too. What state and what country are the exceptions.

1. State 2. Country

b. Two six letter North and Meso American countries, and the six letter capital of another North American country, are spelled with alternating A's. Fill in the blanks to name them.

3. A _ A _ A Country
4. A _ A _ A Country
5. A _ a _ A Capital

II. Distinguish between the following: (10 pts.)

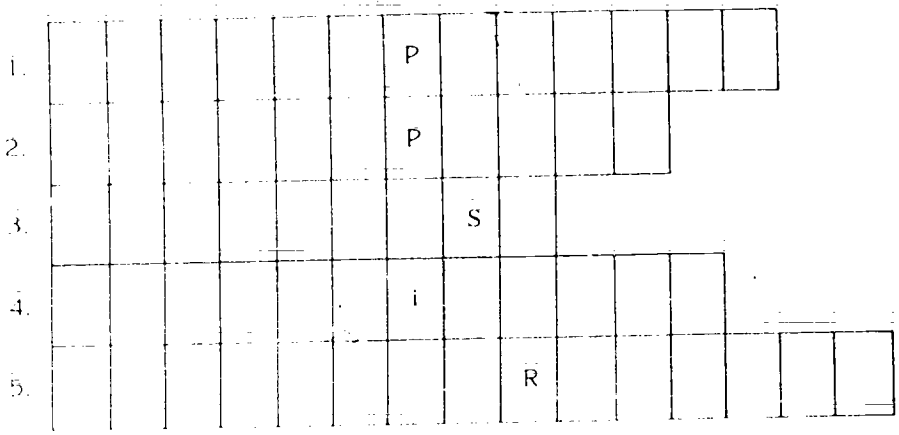
1. A) Typological race:

B) Social Race:

2. A) Allen's Rule: (10 pts.)

B) Bergmann's Rule:

Anagram. Use clues below. 1 pt. each



1. Record and analyze the range of human physical variations both among populations and among individuals within a population by measurements of form.
2. Greatly increased deposits of fat in the buttocks, envisioned by some investigators as a probable genetic adaptation to cyclic food scarcity.
3. The theory that states that I.Q. tests test intelligence and that differences in I.Q. scores (and thus intelligence) are genetically determined (heritability) at a level of about 0.8 (80%).

4. New field of scientific research whose goal is proving that aggression and altruism are genetic endowments.

5. (2 words). Variation in a trait which shows gradual difference in frequency over space, instead of being abruptly bounded in one geographical region. Nearly all human polymorphic traits exhibit this.

APPENDIX D

Depending on the text chosen, the following films have been used as supplemental Audio-visual material. Some films have written textual material which may be helpful. It is, in certain cases, advisable to have the learning disabled students read the supplements both before and after viewing the films. Some of the films are quite controversial, e.g., *Sociobiology: The Human Animal*, and will become the subject of stimulating discussions in the classroom. It is always advisable for the instructor to pre-view the films before showing them to the class. The instructor can indicate scenes of importance or emphasize particular points which are the most important.

Yanomamo: A Multidisciplinary Study. USC, 43, min., color, 1971. An excellent film that would be useful to open the course. Presents the findings of a multidisciplinary research team that investigated the Yanomamo Indians, who are located on tributaries of the Orinoco River in Venezuela. Gives examples of how field research is carried out in the areas of ethnology, linguistics and physical anthroplogy.

Dr. Leakey and the Dawn of Man. IUAVC, 26 min., color, 1967. Although some of the findings in this film have been corrected by later research, it is still an excellent one to open an introductory course. In this context it deals with the topics of the continuity of humankind and the study of human development by anthropologists. It also lays the groundwork for chapter 5, dealing with the fossil primates.

Survey of the Primates. ACC/PH, 38 min., color, 1970. One reviewer has called this film the "best general survey film of primates available." It gives a broad overview of the Primate order. The basic characteristics of the primates and their geographic distribution are also given.

Mountain Gorilla. UCEMC. 16 min., color, 1959. A study of mountain gorilla behavior in Africa. Very good introductory film detailing aspects of gorilla behavior.

Miss Goodall and the Wild Chimpanzees. PSU/PCR 28 min., color, 1966. Film shows how chimpanzees are capable of making and using

primitive tools. It also depicts ethological fieldwork and is one of the classic films in the field of primatology.

Baboon Behavior. PSU/PCR, 31 min., color, 1961. Another classic film in the field of primatology, part of a series of about twenty films depicting various aspects of baboon behavior in their natural habitat. This film provides an overview of baboon troops, focusing on group behavior and individual interaction.

The First Signs of Washhoe. T-L; 60 min., color, 1975. Intriguing, humorous, sometimes moving documentary starring the chimpanzee Washoe, who successfully mastered a modified sign language and spurred a wave of research on the language ability of higher primates. One of the very finest of the *Nova* films. Washoe, et. al. are now housed on the Central Washington University campus.

Tobias on the Evolution of Man. PSU/PCR, 17 min., color, 1975. Phillip Tobias, the noted paleontologist, traces the evolution of humans. Discusses and shows fossil remains of Australopithecines.

The Man Hunters. FI, 52 min. color., 1971. Excellent film that provides a broad overview of many topics discussed in chapters 5, 6, and 7. Paleontologists Phillip Tobias and F. Clark Howell helped to direct this television documentary about the search for fossil humans. It not only gives the student some idea of method; it also summarizes most of the major research concerning *Australopithecus* and early genus *Homo*. Some mention is also made of Neanderthals and Cro-Magnons. Unfortunately, the later discovery of ER 1470 of course is not included.

Early Stone Tools. PSU/PCR, 17 min.; color, 1967. The development of tools is shown to parallel hominid evolution. Several Neanderthal sites are shown.

Lost World of the Maya. T-L, 36 min., color, 1972. Dr. Eric Thompson discusses the major achievements of the Mayans. Criticism is made of the looting of archeological sites.

Tikal. PSU/PCR, 22 min., color, 1961. Filmed at Tikal, this film serves as an introduction to classic Mayan civilization. It also shows an excavation of a domestic house mound.

The Early Americans. Shell Oil Co., 41 min., color, n.d. Well-put-together documentary that surveys the arrival of hominids into the New World over the Bering land bridge. Prehistoric kill sites, early city sites and earthen burial mounds are shown.

Ascent of Man Series: Lower Than the Angels. T-L; 52 min., color, 1974. The first of Jacob Bronowski's award-winning tributes to the rise of human civilization. Shows how a number of anatomical and cultural adaptations interacted to produce modern humans.

The Ladder of Creation. T-L 52 min.; color, 1974. Program 9 of *The Ascent of Man* series narrated by Dr. Jacob Bronowski. Discusses and

illustrates the theory of evolution. An accompanying book is available.

Sociobiology: The Human Animal. WGBH, 54 min., color, 1977. Morality and justice are not acquired — they are rooted in the genetic code. While proponents see sociobiology as a new way to understand such fields as law, economics and anthroplogy, others denounce it as reactionary political doctrine disguised as science, which could be used to justify inequality, warfare, even "master race" concepts.

Harvest of the Seasons. T-L, 52 min., color, 1974. Dr. Jacob Bronowski in Part 2 of his *Ascent of Man* series graphically describes the development of cultivation and the domestication of animals from their beginnings. Includes some excellent footage of the Bakhtiari pastoralists of Persia. Especially suitable for this chapter in Haviland.

Corn and the Origin of Settled Life in Mesoamerica. PSU/PCR, 40 min., color, 1964. Explores the domestication of corn in the New World through the excavations in the Tehuacan Valley of Mexico.

FILM DISTRIBUTORS

ACC/PH	Appleton-Century-Crofts (right now owned by Prentice-Hall Media, 150 White Plains Rd., Tarrytown, NY 10591).
B&C	B&C Films; 3971 Murietta Ave.; Sherman Oaks, Ca 90406.
COR	Coronet Films; 65 E. South Water St.; Chicago, Il.
CRM/MH	CRM/McGraw-Hill Films, Del Mar, CA 92014.
DA	Document Associates, Inc., 880 Third Ave., New York, NY 10022.
DER	Documentary Educational Resources, 24 Dane St., Somerville, MA 02143.
DIO	Danish Information Office; 280 Park Ave.; New York, NY 10017.
EBE	Encyclopaedia Britannica Educational Corporation; 425 N. Michigan Ave., Chicago, IL 60611.
EDC	Education Development Center; 39 Chapel St.; Newton MA 02158.
FI	Films, Inc.; 1144 Wilmette Ave.; Wilmette, IL 60091.
FIM/RF	Film Images, 17 W. 60th St., New York, NY 10023. Or 1034 Lake St., Oak Park, IL 60301.

HPI	Heritage Productions, Inc. (Attention: Mr. Hiram Hershey), Harleysville, PA 19438 (215-287-8888).
IMI	Information Materials, Inc., 1615 W. Burbank Blvd., Burbank, CA 91506.
IUAVC	Indiana University Audio-Visual Center, Bloomington, IN 47401.
NYU	New York University Film Library, 26 Washington Place, New York, NY 10003.
PC	Pacific Cinematheque, 1616 W. 3rd Ave., Vancouver, BC, Canada.
PF	Phoenix Films, Inc., 470 Park Ave. South, New York, NY 10016.
PSU/PCR	PCR Films, Pennsylvania State University, Audio-Visual Services, University Park, PA 16802.
Shell Oil	Shell Film Library, 1433 Sadlier Cir., W.Dr., Indianapolis, IN 46239.
T-L	Time-Life Films, Time and Life Building, Rockefeller Center, New York, NY 10020.
UCEMC	University of California Extension Media Center, 2223 Fulton St., Berkeley, CA 94720.
UEVA	Universal Education and Visual Arts, Inc., 221 Park Ave. South, New York, NY 10003.
USC	Instructional Services Center, University of South Carolina, Columbia, SC 29208.
WER	Wheelock Educational Resources, P.O. Box 451 Hanover, NH 03755.
WGBH	WGBH Educational Foundation, 125 Western Ave., Boston Mass. 02134.

APPENDIX E

PHYSICAL ANTHROPOLOGY VOCABULARY
A110, C.J. Sands

(+ before part of word = suffix) (+ after part of word = prefix)

+ cene — refers to geologic epochs
paleo + — old
eo — dawn
oligo + = scant, few

cata + — down facing
trans + — across
port — carry
ambi, amphi + — both

mio + — middle
plio + — more (10m 3m BP)
pleisto + — most (3m 10,000BP)
holo + — complete, entire (10,000BP)
+ zoic — refers to the animal stage
archean + — ancient
protero + — before, earlier
paleo + — old
meso + — middle
ceno + — recent
anthropo + — man and womankind
+ oid — apes; fossil man, modern man
+ id — fossil man
pith-ecus — ape
loco — place
arbor + — tree
brach + — refers to forelimbs
epi + — upon
dia + — akin to or different
mono + — one
di + — two
bi + — two
tri + — three
quadra + — four
ad + — to, toward
ab + — away from
homo + — same or man
post + — after
pre + — before
onto + — being, existing
phylo + — history of being
hetero + — different
chromo + — color
syn + — same
rhin — nose
simian — monkeys
terra + — land
para + — like, similar to
bio + — life
+ logy — science, study
platy + — flat

micro + — small
macro + — large
magnum — large
meta + — between, with, after
+ lithic — stone
petra — stone
+ graph — illustrate, chart
ex + — out
en, endo + — in; into
multi + — many
poly + — many
ethno + — life style
+ dexter — right
sinister — left
mal + — bad
neo + — new
con — with, against
pan — all
omni + — all
corpus — body
a + — with or negative (not)
archaeo + — old, archaic
manu + — hand
deme — population
natal — birth
+ vore — eat
carne — meat
primo — first
pan — universal, all
ger — elderly, old
australo + — southern
hemo + blood
chrono — time
anti + — against
morph — form
+ ped — foot
strata + — layer
bio + — life
geo + — land
prehensile — seize, hold

TRY THESE

neonate
omnivore
diachronic
pithencanthropines
epidemic
amorphous

ambidextrous
geomorphology
paleontology
catarrhine
Australopithecus
dimorphism
arboretum
panAmerican
paleolithic
gerontology

synchronic
pleistocene
mesozoic
bipedal
heterosexual
atypical
primatologist
manual dexterity
petrified

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