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UPSC Mains 2025 Anthropology Paper 1

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Q1(a) · 10 marks

Mendelian and non-Mendelian traits.

Anthropology GS 1 · 2025 · Mendelian genetics in man-family study, single factor, multifactor, lethal, sub-lethal and polygenic inheritance in man.

Revision summary

Mendelian traits follow one-locus segregation and can be read in a pedigree.

ABO, PTC tasting, albinism, haemophilia A and Huntington disease are standard examples.

Multiple alleles and sex-linkage extend Mendelism; they do not cancel it.

Non-Mendelian traits include polygenic stature and skin colour, linkage, maternal mtDNA and imprinting.

Environment plus many genes gives a curve, not a 3:1 ratio.

Use family study for Mendelian markers and quantitative genetics for everyday variation.

Single-factor, multifactor, lethal and polygenic inheritance is this same distinction.

Introduction

Mendelian traits are characters that pass from parents to children according to Mendel's two basic laws: segregation and independent assortment. Non-Mendelian traits do not follow those simple one-gene rules. Biological anthropology needs both ideas, because some human markers behave like garden peas, while height, skin colour and many diseases do not.

Body

Mendelian traits in humans

A Mendelian trait is usually controlled by alleles at one locus. Those alleles separate when gametes form, so a clear pattern appears in a pedigree. Dominance, recessivity and sex-linkage change how the trait looks, but they do not cancel particulate inheritance.

- **Gregor Mendel** showed this with peas. **William Bateson** and **Archibald Garrod** then applied the same logic to humans, including inborn errors of metabolism.
- **ABO blood groups**, described by **Karl Landsteiner**, are a standard anthropological example. There are three alleles at one locus (I^A , I^B and i). A and B are codominant, and O is recessive, but transmission is still one-locus Mendelism.

- **PTC tasting, oculocutaneous albinism, Huntington disease** (autosomal dominant) and **haemophilia A** (X-linked recessive, famous in European royal pedigrees) are further human examples.

- **Tay-Sachs disease** is still Mendelian even though the homozygous child often does not reproduce. The locus follows Mendel; the fitness of the genotype does not.

Family study and Hardy-Weinberg teaching both start from this single-locus picture.

Non-Mendelian traits

Most characters that anthropologists actually measure are not garden peas.

- **Polygenic and multifactorial traits:** Stature and skin colour are the classic anthropological examples. Many genes of small effect, plus sunlight, diet and disease, produce a continuous curve rather than two neat classes. **R. A. Fisher** and later quantitative genetics explained this as many Mendelian loci acting together, which is why skin colour must never be taught as a 3:1 "racial" mark.

- **Linkage:** Genes on the same chromosome travel together until recombination. They do not assort independently.

- **Mitochondrial inheritance:** mtDNA comes from the mother. A father with a mitochondrial disorder does not pass it to his children. Leber hereditary optic neuropathy is a clinical example.

- **Imprinting and epistasis:** A gene may be silenced according to which parent it came from, or one locus may hide another. Simple dominance arithmetic then fails.

- **Sickle-cell:** The locus is Mendelian, but the heterozygote has a different cellular picture from either homozygote. The inheritance is Mendelian; the phenotype is not a simple dominant-recessive class.

Why the distinction matters

Mendelian analysis is the right tool for blood groups, many clinical loci and genetic counselling. Non-Mendelian architecture explains everyday human variation, complex disease and the old misuse of "race". Single-factor, multifactor, lethal and polygenic inheritance are two readings of the same genome.

Flow diagram

Human traits -> Mendelian

Human traits -> Non-Mendelian

Mendelian -> One locus / pedigree

Mendelian -> ABO, PTC, haemophilia

Non-Mendelian -> Polygenic height and skin

Non-Mendelian -> Linkage / mtDNA / imprint

Conclusion

Multiple alleles and sex-linkage still obey segregation, so they remain Mendelian. The non-Mendelian label belongs to polygenic, linked, cytoplasmic and imprinted systems. Anthropology needs pedigrees for discrete markers and quantitative genetics for the living body.

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Q1(b) · 10 marks

Theoretical significance of Purum kinship-system.

Anthropology GS 1 · 2025 · Kinship

Revision summary

The Purum are a Kuki-Chin group used by Needham as a test case for alliance theory.

The claim was prescriptive marriage to mother's brother's daughter, with wife-givers and wife-takers in a cycle.

- **Needham argued against Homans and Schneider:** the pattern is structure, not sentiment.

The case mattered because it took elementary structures beyond Australia and clarified prescription versus preference.

Ackerman and others showed that the tables did not seal the cycle as neatly as the model.

The lasting names are Lévi-Strauss, Needham and the model-practice gap.

Introduction

The Purum are a Kuki-Chin people of the Indo-Burman hills. They became famous in kinship theory because **Rodney Needham** used their marriage rules as a test of **Claude Lévi-Strauss's** alliance theory. The question asks for theoretical significance, not a full ethnography of one group.

Body

What Needham claimed

Needham read Purum marriage as a **prescriptive matrilineal** system. A man is expected to marry his mother's brother's daughter, or a woman who stands in that structural place. Women move in one direction. Lineages become wife-givers and wife-takers, and the groups are ranked by that flow rather than by a simple "exchange of sisters".

- **Alliance, not descent:** Following Lévi-Strauss in *The Elementary Structures of Kinship*, the unit of study is the relation between groups, not only a lineage unfolding through time.
- **Form, not household feeling:** **George Homans** and **David Schneider** had said that men prefer mother's brother's daughter because they feel close to the mother's brother. Needham's *Structure and Sentiment* (1962) rejected that psychology. For him the pattern is a logical structure, not a family mood.

A nearby ethnographic comparison is **Edmund Leach's** Kachin of highland Burma, where asymmetric alliance also produces ranked wife-givers and wife-takers.

Why it mattered theoretically

- **A test of elementary structures:** If a small highland society could run a circulating connubium, Lévi-Strauss's contrast between elementary (prescriptive) and complex (choice-based) marriage gained an Asian example, not only an Australian one.
- **Prescription versus preference:** Purum forced a clear vocabulary. Is mother's brother's daughter marriage a jural rule, or only a statistical leaning? That distinction still organises kinship analysis.
- **Model versus practice:** Later re-counts of Needham's tables, especially by **Charles Ackerman**, argued that actual marriages did not close the cycle as neatly as the model. Needham's replies, and his later caution about "the Purum case", turned the episode into a lesson on **formalism**. An elegant diagram can outrun the census of who actually married whom.

Theoretical yield

The significance is threefold. Alliance theory was made operational. Psychological reduction of cross-cousin marriage was challenged. Anthropology learned to separate the grammar of a kinship system from the mess of practice.

Flow diagram

Purum marriage -> MBD prescription
MBD prescription -> Alliance cycle
Alliance cycle -> Test of Lévi-Strauss
Alliance cycle -> Model versus practice
Purum marriage -> Compare Kachin / Leach

Conclusion

Purum kinship is theoretically famous because it was asked to carry alliance theory. It remains a clear exhibit of matrilineal prescription, and the case that taught students to check a beautiful structure against real marriage counts.

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Q1(c) · 10 marks

Osteodontokeratic culture and its makers.

Anthropology GS 1 · 2025 · Paleolithic

Revision summary

Osteodontokeratic means a supposed bone-tooth-horn culture named by Raymond Dart at Makapansgat.

The claimed makers were *Australopithecus prometheus*, now placed in *Australopithecus africanus*.

Dart read clubs, saws and daggers from antelope parts, and inferred hunting and violence.

C. K. Brain showed that leopards, hyenas and cave processes explain much of the assemblage.

The idea survives as a taphonomy lesson, not as a real industry.

Osteodontokeratic is defined by site, claimed maker, and the later critique.

Introduction

Raymond Dart gave the name osteodontokeratic culture to a supposed bone, tooth and horn tool kit from **Makapansgat** in South Africa. He said australopithecines made those tools and used them to hunt. The idea is now taught as a warning: do not call every broken bone a culture before taphonomy has been done.

Body

Dart's claim

At Makapansgat Limeworks Dart described a non-stone industry. He read long bones as clubs, mandibles as saws and scrapers, canine teeth as projectiles, and horns as daggers. He called this **osteodontokeratic** (bone-tooth-horn) and gave it to *Australopithecus prometheus*, a name later folded into *Australopithecus africanus*.

- **Site:** Makapansgat, South Africa, in australopithecine-bearing cave breccias.
- **Background:** Dart's **Taung child** (1924) had already placed australopithecines on the human side of the family. In the 1950s the osteodontokeratic papers tried to give those hominins culture without stone tools.
- **Story attached:** Hunting, and even interpersonal violence. **Robert Ardrey's** later "killer ape" popular writing drew on this mood, even though Ardrey was not the field scientist.

Why the idea was tempting

If early hominins made tools from carcass parts, culture would be older than the Acheulean handaxe, and hunting could be pushed deep into the Pliocene. That fitted a mid-century taste for "man the hunter" and for African origins after Taung.

The critique that stuck

C. K. Brain, especially in *The Hunters or the Hunted?* (1981), showed that many supposed tools are the signature of **leopards, hyenas and cave collapse**, not of artisans. Tooth marks, spiral fractures and the over-representation of certain bones match carnivore dens and geological concentration. A famous related image is the leopard puncture in some australopithecine skulls: the hominin was prey, not always hunter.

The fossils at the site remain australopithecine. The culture does not survive as a real tool tradition.

- **Lesson:** Hominins present in a cave are not automatically tool-makers. Osteodontokeratic is a taphonomy parable, not Africa's first industry.
- **What remains useful:** The debate professionalised faunal analysis. Hunting versus scavenging, and how cave assemblages form, still rest on Brain's ground, not on Dart's clubs. Later accepted bone tools, such as some from Swartkrans, are a different and much more cautious file.

Flow diagram

Dart -> Osteodontokeratic
Osteodontokeratic -> Makapansgat A. africanus
Osteodontokeratic -> Killer-ape reading
Killer-ape reading -> Brain taphonomy
Brain taphonomy -> Carnivore and geology not tools

Conclusion

Dart named a bone-tooth-horn culture and gave it to Makapansgat australopithecines. Taphonomy took the culture away and left the fossils. The significance is methodological: culture must be demonstrated, not read off every broken bone.

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Q1(d) · 10 marks

Smell as a signal among non-human primates.

Anthropology GS 1 · 2025 · Characteristics of Primates

Revision summary

Smell is chemical communication through glands, urine and body odour.

Strepsirrhines keep a rhinarium and vomeronasal organ and mark heavily, as in ring-tailed lemur stink fights.

Callitrichids such as marmosets and tamarins mark range with glands.

Haplorhine monkeys and apes rely more on vision, though some inspection behaviour remains.

Functions include territory, reproductive status, kin recognition and alarm.

Human pheromone claims are a separate and contested literature.

Introduction

Among non-human primates, smell is a social signal, not a leftover sense. Chemical cues on the body and in the environment tell others who is here, who is ready to mate, and whose range this is. The channel is stronger in some lineages than in others.

Body

How the signal works

Smell travels as urine, faeces, gland secretions and whole-body odour. Many **strepsirrhines** (lemurs, lorises, galagos) keep a moist nose and a working **vomeronasal organ** (Jacobson's organ). They are olfactory specialists. **Haplorhines** (tarsiers, monkeys, apes) reduced that hardware as colour vision and facial signalling expanded. This is a phylogenetic contrast, not a ladder. A lemur is not a failed monkey.

Field primatology by workers such as **Alison Jolly** on ring-tailed lemurs made scent-marking visible to anthropology students who otherwise notice only calls and faces.

Functions of the signal

- **Territory and range:** Ring-tailed lemurs (*Lemur catta*) mark with wrist and upper-arm glands. Males even waft marked tails in ritual "stink fights" over space and status. Marmosets and tamarins (callitrichids) use circumgenital and chest glands to label a home range, as **A. F. Dixson** and field studies of New World monkeys have described.
- **Sex and rank:** Odour can advertise oestrus, individual identity and dominance. In many strepsirrhines, chemical cues help decide who may approach whom. In catarrhine monkeys and apes the same work is done more by vision and behaviour, though residual sniffing and genital inspection still occur, for example in some macaques.
- **Kin and infant:** Mothers and infants recognise one another partly by smell. Nocturnal mouse lemurs and lorises lean on nest and body odour more than diurnal monkeys do.
- **Alarm and spacing:** A volatile cue can draw a group together or, conversely, warn that a predator or a rival troop has passed.

Comparative yield

Primate communication is **multimodal**. Smell is the quiet channel that human observers under-record because our own noses are weak. Strepsirrhine marking, New World glandular marking, and the haplorhine shift toward vision together define the contrast. Contested

human pheromone claims belong to a different question.

Flow diagram

Scent signal -> Territory
Scent signal -> Sex and rank
Scent signal -> Kin and infant
Strepsirrhines -> Scent signal
Haplorhines -> Vision-heavy

Conclusion

- **Smell among non-human primates is a full signal system with senders, receivers and contexts:** territory, mating and kinship. It is richest where the vomeronasal organ and scent glands still work. Treat it as comparative primate behaviour, not as a story about human attraction.

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Q1(e) · 10 marks

Culture and embodiment.

Anthropology GS 1 · 2025 · The Nature of Culture

Revision summary

Embodiment means culture is lived as a body, not only as symbols in the head.

Csordas, following Merleau-Ponty, treated the body as the ground of culture.

Bourdieu's habitus is class and gender as posture, taste and practical sense.

Mauss described techniques of the body such as walking, swimming and childbirth.

Medical anthropology uses the mindful body and structural violence made flesh.

The body is cultural practice, not a costume.

Introduction

Embodiment means that culture is not only a set of ideas people carry in their heads. It is a way of being a body in the world. The body is not a biological object with culture painted on top. Habit, gender, illness, ritual and inequality become flesh.

Body

From body as object to body as subject

Older physical anthropology measured the body. Older cultural anthropology often treated it as a vehicle for kinship and belief. **Thomas Csordas**, drawing on **Maurice Merleau-Ponty**, made the body the ground of culture. We do not first have a body and then learn culture. We are a skilled, oriented body.

- **Pierre Bourdieu's habitus:** How one sits, eats, labours and feels shame becomes class and gender. A child who is taught to eat last, to occupy less space, or to carry head-loads, learns culture as posture and taste, not only as a rule-book.
- **Marcel Mauss:** "Techniques of the body" showed that swimming, marching, sitting and childbirth positions are culturally transmitted. They are as social as a kinship term.
- **Against mind-body dualism:** If culture is only a text to be read, we never return to gait, breath, scar and skill.

Where it shows up

- **Ritual:** **Victor Turner** treated the ritual body as a site of transformation. Csordas's work on charismatic healing treated cure as a bodily event, not only a change of doctrine. A possession séance or a pilgrimage on foot is embodiment, not a pamphlet.
- **Caste, gender and work:** Who may enter a kitchen, whose spine is marked by load-carrying, and whose hunger is served last are political anatomy. **Nancy Scheper-Hughes** and **Margaret Lock** called this the "mindful body": individual body, social body and body politic.
- **Medical anthropology:** Stunting, stigma of leprosy or disability, and **Paul Farmer's** structural violence are embodiment in a health register. Inequality is not only a metaphor when it is short stature and repeated infection.
- **A contemporary example:** Masking, distancing and "essential worker" bodies during COVID-19 showed how a public health rule becomes a trained bodily practice, and how some bodies were more exposed than others.

Why it matters

The idea sits between socio-cultural theory and biological anthropology. It refuses two reductions: culture as disembodied meaning, and the body as a culture-free organism.

Flow diagram

Culture -> Embodiment
Embodiment -> Habitus
Embodiment -> Perception and skill
Embodiment -> Illness, gender, ritual

Conclusion

- **Embodiment means culture is practised as a body:** trained, gendered, sick and skilled. Csordas and Bourdieu give the vocabulary. Ethnography of ritual, labour and illness gives the evidence. The argument is a critique of the mind-body split, not a synonym for physical education.

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Q2(a) · 20 marks

Discuss the Miocene hominoid remains and their significance in evolution

Anthropology GS 1 · 2025 · Characteristics of Primates

Revision summary

The Miocene, about 23 to 5.3 million years ago, was the main radiation of fossil apes, followed by late-Miocene decline.

Africa gives Proconsul as a stem hominoid that was not yet a specialised hanging ape.

Europe gives Dryopithecus and related forms, which matter for biogeography.

Asia gives Sivapithecus on the orangutan line. Ramapithecus is not a hominin.

Gigantopithecus is a giant pongine side branch.

Significance lies in mosaic traits, an African last-common-ancestor setting, and climate winnowing of apes.

There is no single missing link.

Introduction

The Miocene epoch, about 23 to 5.3 million years ago, was the age of ape radiation. Fossil apes were more diverse in Africa, Europe and Asia than living apes are today. These fossils do not give one missing link. They give a bush of experiments from which later African hominins and living great apes were winnowed.

Body

African Miocene

East African early and middle Miocene sites such as Rusinga yield Proconsul and related proconsulids. Proconsul was tailless, but it was still an above-branch quadruped rather than a specialised hanging ape. It is a useful picture of a stem hominoid before modern suspensory living. Morotopithecus from Uganda hints at a more upright trunk. Later forms such as Kenyapithecus show thicker enamel and harder-object diets as forests became more seasonal.

These taxa matter because the last common ancestor of African apes and humans is widely placed in Africa after this radiation. They also show that "ape" did not always mean brachiator. **Louis Leakey's** early Miocene work in East Africa, and later teams, built this African file.

Europe and the Mediterranean

Middle and late Miocene Europe produced Dryopithecus, Pierolapithecus, Anoiapithecus and Ouranopithecus in Greece. Some combine a more upright body plan with thick enamel. They document hominoids outside Africa. They also feed debate on whether some late Miocene Eurasian forms sit near the African-ape clade. European taxa show diversity and biogeography; they are not a route that leads automatically to Homo.

Asia

Siwalik Sivapithecus, studied for decades in the Indian subcontinent, shows a face closer to the orangutan. In the 1960s and 1970s **Elwyn Simons** and others promoted a split genus Ramapithecus as an early hominin because of thick enamel and small canines. That story was

withdrawn. Thick enamel is not a hominin monopoly, and Ramapithecus is generally placed with Sivapithecus on the orangutan side. Gigantopithecus in East Asia is a giant pongine side branch, known mainly from jaws and teeth, not a human ancestor.

Significance in evolution

- **Radiation then decline:** Late Miocene cooling and seasonality reduced ape diversity. Monkeys expanded. Hominins inherit a narrowed ape world.
- **Mosaic evolution:** Enamel, face and locomotion do not travel as one package. That lesson later killed simple Ramapithecus phylogenies.
- **The last common ancestor problem:** No Miocene fossil is "the" chimpanzee-human ancestor. The set constrains what that ancestor could have been: African, still able to use trees, and not a ready biped.

Flow diagram

Miocene hominoids -> Africa: Proconsul
Miocene hominoids -> Europe: Dryopithecus
Miocene hominoids -> Asia: Sivapithecus
Africa: Proconsul -> African ape-human ancestor
Asia: Sivapithecus -> Orangutan line

Conclusion

- **Miocene hominoids are the comparative baseline for later hominins:** a pan-Old World ape radiation, locomotor experiments, and a late-Miocene squeeze. Significance is phylogenetic and ecological. Ramapithecus is not the first man. Proconsul, Sivapithecus and the African setting of the last common ancestor are the working set.

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Q2(b) · 15 marks

Compare and contrast the symbolic approaches of Clifford Geertz and Victor Turner to understand culture

Anthropology GS 1 · 2025 · Symbolic and interpretive theories (Turner, Schneider and Geertz)

Revision summary

Geertz treats culture as webs of significance, uses thick description, and reads the Balinese cockfight as a text.

Turner treats ritual symbols as operators, distinguishes dominant and instrumental symbols, and uses liminality, communitas and social drama.

Both are symbolic and anti-reductionist.

The contrast is hermeneutic text versus processual performance, and order-reading versus conflict-and-redress.

Geertz is not mere idealism, and Turner is not mere functionalism. They are complementary methods.

Introduction

Clifford Geertz and **Victor Turner** both took symbols seriously and both rejected thin behaviourism. Then they diverged. Geertz reads culture as a public text of meanings. Turner watches symbols work through ritual process. Compare them as two methods for understanding culture.

Body

Geertz: culture as a text

In *The Interpretation of Cultures* (1973) Geertz says that man is an animal suspended in webs of significance he himself has spun. The anthropologist's job is **interpretation**, not law-like explanation. **Thick description** - his wink versus twitch example - recovers the public code that makes an action this action and not another.

- **The Balinese cockfight** is Geertz's famous example. Status, masculinity and village structure are said in the fight. The event is a story the Balinese tell themselves about themselves.
- **Models of and models for:** Symbols both represent a world and give a template for acting in it.
- **Method:** Hermeneutic. The ethnographer is a literary critic of social life. Meaning is public, not locked in a private psyche. This was also a swipe at too-mental culture-and-personality work.

A comparable public text in India is a Republic Day parade or a televised temple festival: people perform a story about order, nation and devotion, which the observer then interprets.

Turner: symbol as process

Turner's Ndembu ethnography in *The Forest of Symbols* (1967) treats ritual symbols as **operators** in social drama. A dominant symbol such as the milk tree condenses many meanings and does things: it moves people across statuses.

- **Structure and anti-structure:** In *The Ritual Process* (1969), drawing on **Arnold van Gennep's** rites of passage, Turner describes liminality and communitas. Hierarchy is stripped in the in-between, then restored or remade.

- **Instrumental versus dominant symbols:** Some symbols are tools in a sequence. Some are ends in themselves, polyvalent and emotionally loaded.
- **Method:** Processual. Watch the ritual through time. Plot breach, crisis and redress. Meaning sits in performance and in social conflict, not only in a static dictionary of tropes.

An Indian wedding, a pilgrimage such as the Kanwar yatra, or a protest sit-in can be read in Turner's terms: people pass through a liminal phase, a temporary *communitas* appears, then ordinary hierarchy returns.

Compare and contrast

- **Shared ground:** Both are symbolic anthropologists. Both refuse to reduce culture to ecology or to unconscious grammar alone. Turner can sound more Durkheimian. Geertz can sound more Weberian.
- **Unit of analysis:** Geertz studies the enacted text and the local interpretation. Turner studies the ritual process and the social drama around it.
- **Conflict:** Geertz can underplay rupture, as when the cockfight is read as a statement of order. Turner builds conflict in, as schism and repair.
- **Field feel:** Geertz's ethnographer interprets. Turner's ethnographer follows a sequence and the political work of symbols.

Flow diagram

Symbol -> Geertz: text and thick description
Symbol -> Turner: process and liminality
Geertz: text and thick description -> Cockfight
Turner: process and liminality -> Ndembu ritual

Conclusion

Geertz tells you what a public symbol means in a cultural web. Turner tells you what a symbol does as people pass through crisis and rite. Culture needs both: a readable order and a processual engine. The two methods work together.

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Q2(c) · 15 marks

How political economy is integrated with ecological and adaptability perspectives in bio-cultural anthropology?

Anthropology GS 1 · 2025 · Concepts and methods of Ecological Anthropology: Bio-cultural Adaptations

Revision summary

Adaptability is plasticity, acclimatisation and subsistence flexibility.

Ecology is energy, season, pathogen and land, and it is not a neutral stage.

Political economy is class, market, state and colonial history, as in Wolf and Mintz.

The join is political ecology and the embodiment of inequality, as in Goodman and Leatherman.

The household is the hinge of diet, labour and exposure.

Poverty is not an adaptation.

Introduction

Bio-cultural anthropology studies how bodies and environments make each other through culture. Political economy asks who owns the land, water and labour. The question wants the join: adaptation is never only a clever fit to climate. It is a fit to a climate already shaped by prices, stigma and the state.

Body

Three lenses, one field

- **Adaptability:** Humans adjust by acclimatisation, developmental plasticity and shifts in subsistence. **Julian Steward's** cultural ecology, and later human biology of high altitude, heat and cold, sit here. Andean chest morphology and Tibetan responses to hypoxia are standard biological examples.
- **Ecology:** Energy, seasonality, pathogens and soils matter. Cultural ecology sometimes treated "the environment" as a neutral stage.
- **Political economy:** Production, class, colonial and post-colonial markets, and household labour. **Eric Wolf** in Europe and the People without History and **Sidney Mintz** on sugar showed that people do not adapt to nature in the abstract. They adapt to nature as already claimed.

How the join is made

Political ecology puts power inside the ecosystem. Deforestation, dams, slum heat islands and occupational dust are ecological facts with owners. **Alan Goodman, Thomas Leatherman** and other biocultural medical anthropologists treat nutrition, growth and blood pressure as biological outcomes of those conditions. **Paul Farmer** called the same process structural violence.

- **Constraint versus strategy:** A high-altitude chest or a seasonal hunger season can be adaptability. The same chest working in a mine, or hunger in a landless household, is political economy written as physiology.
- **Embodiment of inequality:** Growth failure, anaemia and reproductive outcomes track class, caste, tribe and gender. Biology is not the opposite of politics. It is one of politics' archives.
- **Household as hinge:** Who eats last, who migrates, and who faces indoor smoke is the ecology of the hearth under kinship and wage.

A concrete Indian join is Adivasi nutrition near mines and plantations, or urban gig-workers in heatwaves: season and pathogen are real, but so are land loss, informal wages and weak housing. COVID-19 reverse migration made the same point: infection ecology met political economy on the highway.

Anthropological payoff

Pure adaptability talk can naturalise poverty as "they are adapted to scarcity". Pure political-economy talk can forget pathogens, altitude and developmental windows. Bio-cultural work holds both. Plasticity is real, and so is the unequal distribution of stressors. Nutritional status is the same architecture in a health key.

Flow diagram

Ecology -> Bio-cultural body
Adaptability -> Bio-cultural body
Political economy -> Bio-cultural body
Bio-cultural body -> Inequality embodied

Conclusion

Integrate the three by treating environment as political and the body as historical. Adaptability is the capacity. Political economy decides which bodies must use it, and how far. That is bio-cultural anthropology after the critique of cultural ecology's innocent ecosystem.

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Q3(a) · 20 marks

How anthropologists assess the nutritional status of a community? Discuss the significance of intersectionality of ecology, culture, and social inequality in the study of nutritional anthropology

Anthropology GS 1 · 2025 · Applications of Anthropology

Revision summary

Assess with stunting, wasting, underweight, MUAC and BMI, plus diet recall and a seasonal calendar, plus clinical or lab signs where possible.

Always add ethnography of who eats what.

Community averages are not community status. Disaggregate by class, caste, tribe and gender.

Ecology is season, infection and soils. Culture is taboos, feeding rules and sharing. Inequality is class, caste, gender and displacement.

Intersection is drought times landlessness times gendered plates.

Intervention follows the join, not nutrition education alone.

Introduction

Nutritional anthropology measures what a community eats and what that eating does to bodies. Then it asks why the plate looks like that. Assessment without inequality gives a clinic without a village. Inequality talk without measurement gives a sermon without a prevalence.

Body

How status is assessed

Anthropologists combine biomedical tools with ethnography. No single index is "the nutrition of the community". **D. B. Jelliffe** and later field manuals made this mix standard; **J. S. Weiner** and IBP-style human biology also pushed comparable anthropometry.

- **Anthropometry:** Height-for-age (stunting) marks chronic undernutrition. Weight-for-height (wasting) marks acute undernutrition. Weight-for-age, MUAC and adult BMI complete the set. Ageing children accurately is part of the method.
- **Dietary methods:** Twenty-four-hour recall, weighed intake, food-frequency lists, seasonal calendars, market baskets and wild-food lists. Sharing and recall bias make the household, not the isolated individual, the usual unit.
- **Clinical and biochemical layers:** Signs of anaemia, goitre and rickets; haemoglobin, vitamin A and iodine where laboratories exist. Field anthropologists often partner with public-health surveys rather than running every test themselves.
- **Ethnographic overlay:** Who cooked, who fasted, who was weaned early, what counts as "food", famine foods and prestige foods. Numbers without this can misread ritual fasting as shortage.

Community means hide the landless household, the girl child and the displaced camp. Status is distributed.

Large Indian surveys such as **NFHS** and programmes such as **ICDS**, **PDS** and **POSHAN Abhiyaan** are the contemporary policy face of the same measurement.

Intersection of ecology, culture and inequality

- **Ecology:** Seasonality, drought, flood, soil micronutrients and infection. Diarrhoea can eat a diet. High-altitude hypoxia and malaria are nutritional stressors, not only "disease". A lean month after the monsoon fails is ecology on the plate.
- **Culture:** Pregnancy taboos, caste and community cuisines, child-feeding rules, alcohol, festival surplus and lean months. Culture can protect, as in breastfeeding norms and food sharing, or harm, as in early thin gruels or denying meat, eggs or milk to women.
- **Social inequality:** Class, caste, tribe, gender and displacement. Intra-household allocation - men and guests first - can turn a sufficient household into an undernourished woman. Markets and ration-shop access are political economy on the plate.

Intersectionality means these are not three boxes added at the end. A drought (ecology) hits sharecroppers (inequality) through a cuisine already low in iron (culture). Stunting in a scheduled-tribe hamlet beside a mine is not "tribal custom". Recent heatwaves, flood years and COVID-19 school-meal interruptions are current reminders that ecology, culture of care and inequality move together.

Significance

Assessment that only reports BMI will prescribe nutrition education. Assessment that traces ecology, culture and inequality together can prescribe land, wages, women's food, sanitation and micronutrients at once. That is the anthropological difference from a camp weigh-in.

Flow diagram

Assessment -> Anthropometry
Assessment -> Diet
Assessment -> Clinical and lab
Ecology -> Nutrition outcome
Culture -> Nutrition outcome
Inequality -> Nutrition outcome

Conclusion

Measure widely with anthropometry, diet and clinical signs. Then explain the distribution through intersecting ecology, culture and inequality. Nutritional anthropology earns its keep when the girl who is stunted is not written only as a cultural type or only as a rainfall statistic, but as both.

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Q3(b) · 15 marks

Critically examine the drawbacks in assuming culture as an 'integrated-closed system in understanding of contemporary society

Anthropology GS 1 · 2025 · The Nature of Society

Revision summary

Closed integrated culture is the picture in Benedict, functionalist equilibrium and the bounded field.

Its virtue was holism against trait lists.

Its drawbacks are conflict, history as in Wolf, power, internal plurality as in Barth, multi-sited scale and rapid change.

Holism remains useful as connection-thinking without a sealed, harmonious whole.

Contemporary society is an open system with unequal articulation.

Introduction

To treat culture as an integrated closed system is to imagine a bounded whole whose parts fit together, like an organism, and whose explanation lies inside the boundary. **Ruth Benedict's** configurations and much functionalism leaned that way. Contemporary society is a poor specimen for that machine.

Body

What the assumption did well

Holism was a method against trait-listing. If the potlatch, the kinship term and the myth seemed to fit, the anthropologist had found a pattern. Benedict's Apollonian and Dionysian portraits in *Patterns of Culture*, **A. R. Radcliffe-Brown's** structural equilibrium, and **Bronislaw Malinowski's** needs in a bounded Trobriand world all used this picture. For a short village study it still disciplines the notebook: ask how institutions implicate one another.

Drawbacks now

- **Conflict and contradiction:** An integrated system underplays faction, class and gender revolt. One person's meaning is another person's injury. Turner's social drama and Marxist anthropology start where harmony ends.
- **History and the outside:** Wolf's *Europe and the People without History* showed that apparently closed communities were already inside colonial markets and states. "Closed" was often an ethnographic optical trick.
- **Power:** Integration can be the ideology of the dominant. Bourdieu's doxa, and later feminist and Dalit critiques, ask whose whole we are describing.
- **Internal plurality:** Cities, migration, media and bilingual households break unanimity. **Fredrik Barth** showed that ethnic groups persist by organising difference at the boundary, not by sharing one homogeneous interior.
- **Scale:** Multi-sited lives cannot be one organism. Transnational kin, NGOs, platforms and law cut every system open. **Arjun Appadurai's** *scapes*, and Gupta and Ferguson on the "field", named this leakiness.
- **Change:** A closed integration model explains persistence better than fashion, conversion or sudden legal change.

- **Contemporary examples write themselves:** a Gulf-migrant household that is both Kerala and Dubai; caste in a metro IT office; WhatsApp rumours that reorganise a village feud; a farmers' protest that draws village moral economy into national television. None of these is a sealed crystal.

What to keep

Critique the closed and the over-integrated, not the duty to connect kinship with economy. Practice theory and political economy keep holism as a question - how do pieces articulate? - without assuming they articulate smoothly or stop at the village fence.

Flow diagram

Integrated closed culture -> Holism and configuration

Integrated closed culture -> Ignores conflict

Integrated closed culture -> Ignores history and markets

Integrated closed culture -> Ignores plurality and scale

Conclusion

Culture as a closed crystal was a powerful teaching picture and a weak map of the present. Contemporary society is leaky, unequal and historical. Use holism as a heuristic for connections. Drop the fiction of a sealed, self-explaining whole.

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Q3(c) · 15 marks

Differentiate between pedigree and genealogical analyses. Discuss the history and application of these methods in anthropological studies

Anthropology GS 1 · 2025 · Human Genetics

Revision summary

- **Genealogy is Rivers' 1910 method:** social ties, kin terms, marriage and rights. Fictive kin count.

Pedigree is a genetic diagram of biological parentage and affected status, used to infer Mendelian inheritance.

The two words are not synonyms.

History runs from Cambridge field kinship on one side to clinical and then medical genetics on the other.

Uses include kinship systems, consanguinity, counselling, and careful overlay with consent.

Alliance theory criticised genealogy-as-enough. It did not erase the method.

Introduction

Genealogy and pedigree both draw links between persons across generations, but they are not the same tool. Genealogy in social anthropology maps socially recognised ties. Pedigree in genetics maps biological descent and trait transmission. Mixing the two words hides a real difference in what is being mapped.

Body

The distinction

Genealogical analysis is **W. H. R. Rivers'** field method (1910). The ethnographer elicits who is called what, who marries whom, and who inherits. The object is the **social** system: descent, alliance, residence and rights. Fictive kin, adoption and term-use belong on the chart because they are socially real.

Pedigree analysis is a biomedical diagram of biological parentage. Standard symbols - squares, circles, shading for affected status - help infer Mendelian modes such as autosomal dominant, recessive, X-linked or mitochondrial. The object is the path of a genotype, not the kinship vocabulary.

A mother's brother on a genealogy is a jural person. On a pedigree he is a node who may or may not carry an allele. You can overlay the two in the field. You must not collapse them.

History

Rivers developed genealogy after the Torres Strait expedition to make kinship comparable and to escape impressionistic tribal sketches. The method organised African, Indian and Pacific ethnography. **Lewis Henry Morgan** had already collected kin terms, but Rivers turned relatedness into a systematic interview.

Pedigree thinking is older in **Francis Galton's** family studies and in clinical medicine. It later became the everyday tool of medical genetics. Anthropology's biological wing took pedigrees into population genetics and genetic counselling. The social wing kept Rivers' charts even while alliance theory criticised descent-chart fetishism. Needham's Purum work is part of that

later caution: a genealogy is not the whole kinship system.

Applications

- **Social anthropology:** Reconstruct lineage politics, marriage rules and inheritance disputes. Check whether practice matches the stated rule.
- **Biological and medical anthropology:** Recessive disease clustering, consanguinity and genetic load, and counselling. South Indian uncle-niece or cousin marriage, or disease clusters in small endogamous groups, are standard applications. Pedigrees are how Mendelian traits in humans are demonstrated.
- **A contemporary complication:** Direct-to-consumer DNA tests and disputed paternity can contradict both stated genealogy and assumed biological parentage.
- **Ethics:** Collecting pedigrees in a small community can stigmatise. Informed consent and anonymisation are part of the method now.

Flow diagram

Genealogy -> Social kinship / Rivers

Pedigree -> Mendelian genetics

Genealogy -> Alliance, descent, terms

Pedigree -> Disease and counselling

Conclusion

Genealogy asks how relatedness is organised as a social fact. Pedigree asks how a trait travels as a biological fact. Anthropology uses both, on different questions. The difference comes first; the applications follow from it.

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Q4(a) · 20 marks

Anthropology provides a multidimensional understanding of human beings by bridging the gap between science and humanities. Elucidate

Anthropology GS 1 · 2025 · Applications of Anthropology

Revision summary

Anthropology studies one species as organism and as meaning-maker.

The science side is palaeoanthropology, genetics, anthropometry and dating.

The humanities side is ethnography, ritual, kinship and interpretation, as in Geertz.

The bridge is biocultural questions such as nutrition, forensics, language and embodiment.

The two failures are reductionism and culturalism.

Fossils and symbols belong in one understanding of the human.

Introduction

Anthropology's wager is that Homo is one animal who also lives in worlds of symbols, law and history. Science without the humanities yields a body without a world. Humanities without science yield a world without a primate. The discipline is multidimensional when it refuses that split in the same problem.

Body

The science limb

Biological anthropology, prehistoric dating and taphonomy, linguistics as a natural history of languages, and formal demography are scientific in the ordinary sense: measurement, hypothesis, comparison and falsification. **Franz Boas** insisted on this empirical discipline against armchair race science. **Sherwood Washburn's** new physical anthropology later joined fossils, function and behaviour.

Miocene hominoids, Mousterian assemblages, Mendelian loci and nutritional anthropometry are not metaphors. They constrain the stories we may tell about origins, health and variation. Human biology also includes culture as a selective and developmental environment: plasticity and life history. That is science of a biocultural object.

The humanities limb

Ethnography, interpretation of ritual, kinship as moral reason, embodiment, and Geertzian reading of public symbols are humanist crafts: language, context, critique and the particular. **Clifford Geertz** made the literary analogy explicit. Frazer's evolutionism shows what happens when a humanist topic such as religion is forced through a thin scientific costume of unilinear stages. The remedy is not to abandon comparison. It is to interpret.

Bridging as practice

- **Four-field training:** Biological, socio-cultural, archaeological and linguistic wings in one syllabus. Fossils and Purum, nutrition and Turner, sit in the same discipline for that reason.
- **Biocultural problems:** Stunting is a z-score and a gendered plate. Forensic anthropology is osteology and a legal narrative of identity. Language is a cognitive system and a politics of tongue.

- **Against C. P. Snow's two cultures:** Anthropology trains one person to hold a cladogram and a kinship term without converting one into the other.

A current Indian join is anaemia or child growth in NFHS numbers plus ethnography of who eats eggs, who gets ICDS take-home rations, and whose work is in the heat. Another is Siwalik fossils beside living diversity.

Tensions worth naming

Reductionism (genes explain the cockfight) and culturalism (bones are only stories) are the two failures of the bridge. **A. L. Kroeber's** superorganic over-separated culture from biology. Some sociobiology over-joined them. The multidimensional claim is a discipline of the joint: different methods, one species.

Flow diagram

Human being -> Science: body, deep time, measurement
Human being -> Humanities: meaning, ethics, interpretation
Science: body, deep time, measurement -> Biocultural problems
Humanities: meaning, ethics, interpretation -> Biocultural problems

Conclusion

Anthropology is scientific where the primate, the tool and the allele require it, and humanistic where meaning, power and history require it. The gap is bridged by biocultural problems that cannot be answered from one side alone.

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Q4(b) · 15 marks

Write a note on Mousterian tool tradition, Mousterian culture and its makers

Anthropology GS 1 · 2025 · The Nature of Culture

Revision summary

The tradition is Middle Palaeolithic flakes, Levallois technique, scrapers, points and denticulates.

Bordes saw facies as cultural variants. Binford saw functional tool-kits.

Culture includes fire, hunting and shelters. Be cautious on burial and ornament.

Makers in Europe are mainly Neanderthals. In the Levant early modern humans also used Mousterian tools.

The date ballpark is the Middle Palaeolithic, to about 40,000 years ago in Europe.

Mousterian is not identical with all Neanderthal behaviour everywhere.

Introduction

Mousterian names a Middle Palaeolithic stone-working tradition, a broader way of life often linked to Neanderthals, and a set of makers who were not always one species. Tradition, culture and makers are three related things, not three names for Neanderthal.

Body

Tool tradition

The Mousterian is a **flake-based** industry. The famous **Levallois** prepared-core method shapes the core so that the flake's form is already planned. Scrapers, especially side-scrapers, points, denticulates and notched pieces dominate. Handaxes recede relative to the Acheulean. The type site is **Le Moustier** in France.

François Bordes typed regional facies such as typical, denticulate, Quina and Charentian. **Lewis Binford** later argued that many facies are **functional** - butchery versus woodwork - rather than tribal styles. Typology exists; it is not automatically ethnicity. The tradition is economical with stone and suited to hafting, which implies composite tools.

Mousterian culture

Beyond stone, the package includes habitual **fire**, hunting of medium and large mammals, and use of caves and rock shelters. Some sites have pigment and possible personal ornament. Burial is debated site by site. **Shanidar** in Iraq is often cited, with caution. The culture is a Middle Palaeolithic way of life in cold-to-temperate Eurasia, with related industries in the Levant and North Africa. It is not one ceremony, and it is not a single pan-Mousterian religion.

Makers

In Europe the makers are primarily **Neanderthals** (*Homo neanderthalensis*), from roughly the later Middle Pleistocene until about 40,000 years ago depending on region, overlapping incoming *Homo sapiens*. In the Levant, Mousterian assemblages are associated with both Neanderthals and early modern humans, as at Skhul and Qafzeh versus Tabun and Amud. North African Middle Stone Age and Mousterian-like industries have their own hominin casts.

So tradition is technological. Culture is behavioural ecology plus limited symbolism. Makers are Neanderthals as the European default, with early sapiens sharing the toolkit at the gates of Europe.

Flow diagram

Mousterian -> Levallois flakes and scrapers
Mousterian -> Fire, hunt, cave, limited symbol
Mousterian -> Neanderthals and some early sapiens

Conclusion

Mousterian is a flake-and-Levallois tradition, a Middle Palaeolithic adaptive culture, and, in Europe, a Neanderthal signature that sapiens could also knap. Bordes versus Binford belongs on the tradition side: facies need not mean tribes.

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Q4(c) · 15 marks

Critically examine James Frazer's theory of evolutionism. Elucidate the place of religion in modernity

Anthropology GS 1 · 2025 · Classical evolutionism (Tylor, Morgan and Frazer)

Revision summary

Frazer moved from magic as coercion, to religion as petition, to science as law, with sympathetic magic and survivals.

Critique him for armchair method, unilinear stages, intellectualism and colonial ranking. Magic, religion and science coexist.

The usable fragment is like-produces-like and contact.

- **Modernity is incomplete disenchantment:** civil religion, revival movements and political religion.

A smartphone pilgrimage is not a fossil stage.

Durkheim and **Weber** are better guides to religion as social fact and meaning.

Introduction

- **Sir James Frazer's *The Golden Bough* offered a grand evolution of the human mind:** from magic to religion to science. It was armchair, unilinear and too clean. Later theories of religion had to step around that staircase. The second part of the question is whether religion ended when the staircase reached modernity.

Body

Frazer's evolutionism

Frazer treated **magic** as mistaken natural science. By the law of similarity, like produces like. By the law of contact, things once together remain linked. The magician tries to coerce nature. When coercion fails, humans petition personal powers. That is **religion**. When petition is found wanting, **science** explains impersonal law. Folk custom survives as a fossil of earlier stages. Comparison was global and ripped from context: a rite in Rome and a rite in a colonial ethnography became one type.

This is intellectualist evolutionism. Belief systems are ranked as proto-theories of nature, by how much they err.

Critique

- **Armchair method:** Frazer compared library notes, not living economies. **Malinowski's** Trobriand magic in fishing and gardening is practical and social. That already wounds Frazer.
- **Unilinear stages:** Magic, religion and science coexist in every living society, including laboratories with lucky charms. Stages are a Victorian ranking, not a field sequence.
- **Too cognitive:** Ritual does social work that an error-theory of belief cannot see. **Émile Durkheim's** collective effervescence and Turner's ritual process are the usual counters. **E. E. Evans-Pritchard** on Azande witchcraft also showed that "irrational" belief can be logically organised in daily life.
- **Colonial frame:** "Savages" as the childhood of Europe. Later anthropology refused that timeline.
- **What survives:** The catalogue of sympathetic magic still teaches. The staircase does not.

Religion in modernity

Modernity did not empty the world. **Max Weber's** disenchantment was a tendency, not a completed eviction. Secularisation in parts of Europe coexisted with public religion elsewhere, with nationalism as civil religion, with Pentecostal and other revival growth, and with science and piety in the same persons.

- **Place:** Religion remains a source of identity, ethics, protest and consolation. It also remains a field of power, including gender and majoritarianism.
- **Not survivals:** A smartphone pilgrimage, online darshan during COVID-19 lockdowns, or a televised Kumbh is not a Frazerian fossil of magic. It is a contemporary institution and a media form.
- **Indian household:** Clinical medicine and a vow at a shrine often sit in the same family. That coexistence undercuts Frazer's staircase more cleanly than a sermon about secularism.
- **Elucidation:** Modernity pluralises the religious field - privatised belief, marketised devotion, political religion - rather than replacing it with Frazer's science.
- **Durkheim and Weber help the modernity argument more than Frazer himself:** religion as social fact and as meaning under rationalisation.

Flow diagram

Frazer -> Magic
 Magic -> Religion
 Religion -> Science
 Frazer -> Critique: armchair, unilinear
 Modernity -> Religion reorganised not erased

Conclusion

Frazer gave a memorable unilinear career of the mind and a weak ethnography of ritual. Religion in modernity is not the middle step before science. It is a reorganised public and private power. Sympathetic magic remains his usable fragment; the staircase does not.

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Q5(a) · 10 marks

Multispecies, Multi-sited and Critical Ethnography.

Anthropology GS 1 · 2025 · Meaning, Scope and development of Anthropology.

Revision summary

Multi-sited ethnography, associated with George Marcus, follows people, things and conflicts across more than one site.

Multispecies ethnography, as in Kirksey, Helmreich and Tsing, treats animals, plants and fungi as part of social life.

Critical ethnography describes a scene and also asks how power works, whose voice is heard, and what change is possible.

The three answer the limits of one-village, human-only, harmony-seeking fieldwork.

A migrant chain, a human-animal conflict, and a caste or gender justice case illustrate the three methods.

Introduction

Classical ethnography often sat in one village and wrote about one people. Multi-sited, multispecies and critical ethnography open that frame. They follow connections across places, they take other living beings as part of social life, and they ask whose voice the ethnography serves.

Body

Multi-sited ethnography

George Marcus, in his essay on multi-sited ethnography, argued that many contemporary objects cannot be known from one site. The ethnographer follows people, things, metaphors, plots or conflicts across locations. A Gulf migrant is not only a Kerala household and not only a Dubai camp. A commodity chain, a court case, or a rumour on WhatsApp is the same kind of object.

Arjun Appadurai's work on global flows sits beside Marcus: the "field" is a network, not a fence. The method still uses participant observation. It simply refuses to treat the village boundary as the edge of society.

Multispecies ethnography

Eben Kirksey, **Stefan Helmreich** and **Anna Tsing** asked anthropology to take animals, plants, fungi and microbes as companions in social life, not as a silent background. Tsing's *The Mushroom at the End of the World* follows matsutake fungi, pickers and markets. **Donna Haraway's** companion-species work and **Eduardo Kohn's** *How Forests Think* push the same point.

A current example is One Health after COVID-19, or human-elephant conflict on a forest fringe, or street dogs and sanitation in an Indian city. Culture is made with other species, not only about them.

Critical ethnography

Critical ethnography, as **D. Soyini Madison** and earlier Marxist, feminist and postcolonial fieldworkers framed it, does not stop at describing a culture. It asks how power, race, caste, gender and the state produce the scene, and it sides with the possibility of change. **Nancy**

Scheper-Hughes on hunger and **Paul Farmer** on structural violence are medical-anthropological cousins of this stance.

The ethnographer's own position is part of the data. The aim is not a pretty whole, but an account that the marginalised could recognise.

Why the three are asked together

One-site holism is too small for migrants, too human-only for ecology, and too polite for injustice. The three methods are a toolkit: follow the connection, include other species, and name power.

Flow diagram

Ethnography -> Multi-sited / Marcus
Ethnography -> Multispecies / Tsing
Ethnography -> Critical / power
Multi-sited / Marcus -> Network not fence
Multispecies / Tsing -> Other species
Critical / power -> Justice and voice

Conclusion

Multi-sited work follows the object across places. Multispecies work puts other living beings inside the social. Critical ethnography asks who benefits from the story. Together they keep fieldwork, but they drop the fiction of one closed village.

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Q5(b) · 10 marks

Evolutionary significance of menopause.

Anthropology GS 1 · 2025 · Relevance of menarche, menopause and other bioevents to fertility. Fertility patterns and differentials.

Revision summary

Menopause ends fertility well before death and creates a long post-reproductive span in humans.

That is a puzzle because selection usually favours more births.

- **Hawkes's grandmother hypothesis uses Hadza and other foraging data:** older women feed grandchildren.

The mother hypothesis says stopping late births protects children already born.

Chimpanzees rarely match this human pattern.

Significance is cooperative breeding and life history, not a clinic essay.

Introduction

Menopause is the permanent end of fertility well before the end of life. In humans this leaves a long post-reproductive span, especially for women who survive mid-life. That is an evolutionary puzzle, because natural selection usually favours continued reproduction. The significance lies in life history, not in a clinic note on hormones.

Body

The puzzle

Most mammals reproduce until late in life. Wild chimpanzees rarely show a long, healthy post-reproductive period of the human kind. If genes only "care" about more births, stopping ovulation decades before death looks wasteful. **George Williams** posed related life-history problems through antagonistic pleiotropy: a trait can be favoured early in life even if it costs later.

Humans also have unusually long childhoods and high-cost children. Menopause belongs with that slow life history.

Main hypotheses

- **Grandmother hypothesis (Kristen Hawkes):** Among the Hadza and in other foraging data, older women collect food and support grandchildren. Extra calories raise the survival of kin who share the grandmother's genes. Selection then favours a long healthy life after fertility ends. This is inclusive fitness, not sentiment.
- **Mother hypothesis:** Stopping further births reduces the risk that a late pregnancy kills a woman who already has dependent children. The existing brood is protected.
- **Embodied capital and pairing:** Long adult life, male provisioning and pair bonds (as in some models by **Hill** and **Kaplan**) make a three-generation economy possible. Menopause is one piece of that package, not a lone mutation.
- **What it is not:** A simple pathology of ageing. If it were only decay, we would not expect the regular mid-life shift plus decades of useful work.

Killer whales are sometimes cited as another menopause case. They are a comparison, not the human explanation.

Evolutionary significance

Menopause marks humans as cooperative breeders with stacked generations. It helps explain childhood, longevity and female social value after childbearing. It also warns against reading every sex difference as a Victorian "woman's nature". The trait is about kin investment and life history.

Flow diagram

Menopause -> Post-reproductive life
Post-reproductive life -> Grandmother help / Hawkes
Post-reproductive life -> Protect existing children
Post-reproductive life -> Long childhood package

Conclusion

The evolutionary significance of menopause is a long post-reproductive life that can still pay, mainly through grandmaternal help and the protection of existing children. Hawkes and the Hadza, and the chimpanzee contrast, keep the argument in life-history theory rather than in gynaecology.

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Q5(c) · 10 marks

Fission track dating method and its applications.

Anthropology GS 1 · 2025 · Principles of Prehistoric Archaeology. Chronology

Revision summary

Fission-track dating counts damage trails from uranium-238 fission in minerals or glass.

Price, Walker and Fleischer developed the method.

Zircon, apatite and volcanic glass are the usual materials.

Applications include dating tephra at hominin sites, heated stone, and Himalayan or Siwalik thermal history.

Heat can anneal tracks and reset the clock, so dates need stratigraphic and other radiometric checks.

Different minerals do not share one single year-range.

Introduction

Fission-track dating is a radiometric clock that counts damage trails left when uranium-238 atoms split inside a mineral or glass. **P. B. Price, R. M. Walker** and **R. L. Fleischer** developed the method. For anthropology it is a way to date volcanic layers and heated materials that sit with fossils or tools.

Body

How the clock works

Uranium-238 occasionally undergoes spontaneous fission. Each fission leaves a tiny track in the crystal. The sample is polished and etched so the tracks can be counted under a microscope. The uranium content is measured, often by inducing extra tracks in a reactor. Age is then a function of track density and uranium concentration.

Useful materials include **zircon, apatite** and volcanic glass (obsidian or tephra). The method works over a wide geological span, from relatively young volcanic glasses to much older crustal minerals. The range depends on the mineral and on whether tracks have been reset by heat.

Heat can reset as well as date. Heating can anneal old tracks and restart the clock, which is why the method also records thermal history, not only "the age of the rock".

Applications

- **Hominin and Palaeolithic sites:** Volcanic ash and tuff above or below fossils can be dated, alongside potassium-argon and argon-argon where those apply. East African rift volcanics are a standard setting.
- **Obsidian and burnt flint:** Provenance and last-heating events can be approached where tracks and chemistry allow.
- **Siwaliks and mountain belts:** Fission-track work on apatite and zircon is widely used in Himalayan cooling and uplift histories. That geological clock matters when we place Siwalik apes such as *Sivapithecus* in a landscape that was itself rising.
- **Thermochronology:** Even when the "age" is not an occupation date, the thermal path of a basin or a tool-stone source is anthropological context.

Limitation

Tracks fade if the mineral is heated above a closure temperature. Mixed ages and partial annealing need specialist interpretation. Fission-track dates should be cross-checked with stratigraphy and, where possible, with another radiometric method.

Flow diagram

Uranium-238 fission -> Tracks in mineral

Tracks in mineral -> Age from density plus Uranium-238 fission content

Age from density plus U content -> Volcanic layers with fossils

Age from density plus U content -> Himalayan cooling / Siwaliks

Conclusion

Fission tracks count uranium fission damage in zircon, apatite or volcanic glass. Anthropology uses them for volcanic layers, heated stone and landscape history. Heat can reset the clock, so the date is never a slogan.

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Q5(d) · 10 marks

Mitochondrial DNA and human evolution.

Anthropology GS 1 · 2025 · The biological basis of Life

Revision summary

mtDNA is inherited from the mother and does not recombine like nuclear DNA.

Cann, Stoneking and Wilson used it to place the common maternal ancestor of living humans in Africa.

Mitochondrial Eve is a node in a tree, not the only woman of her generation.

Haplogroups map later dispersals. They are not races.

Neanderthal mtDNA and nuclear admixture show that one locus is not the whole story.

Join mtDNA to Y-chromosome and autosomal evidence.

Introduction

Mitochondrial DNA is a small circular genome inside mitochondria. It is inherited almost only from the mother and does not recombine in the way nuclear chromosomes do. Those two facts made it an early clock and tree for human evolution.

Body

Why mtDNA is useful

Because it comes down the maternal line, a tree of mtDNA types is a tree of mothers. Mutation accumulates fast enough, relative to many nuclear regions, to separate human groups on a recent timescale. **Allan Wilson's** laboratory used this logic. In 1987 **Rebecca Cann, Mark Stoneking** and Wilson published the famous mitochondrial work that placed the common maternal ancestor of living humans in Africa.

Popular writing called her "mitochondrial Eve". That name misleads if it sounds like the only woman of her time. She is the most recent woman from whom all living mtDNA lines descend. Many other women lived then; their mtDNA lines later died out.

What it showed about evolution

- **Recent African origin:** Living human mtDNA diversity is greatest in Africa, and non-African lineages sit inside African variation. This supported an Out-of-Africa model against a simple multiregional story of separate ancient origins.
- **Haplogroups:** Later work labelled maternal haplogroups that map dispersal into Eurasia, Australia and the Americas. They are tools for migration history, not races.
- **Archaic cousins:** Neanderthal and Denisovan mtDNA, when recovered, did not match living human mtDNA as a simple continuation. Nuclear DNA later showed some interbreeding. One locus is not the whole species tree.

Svante Pääbo's ancient-DNA programme sits beside this note even though much of it is nuclear. It is the next chapter, not a substitute for the 1987 argument.

Limits

mtDNA is one locus. Selection, population size and drift can warp the tree. Time estimates depend on mutation-rate assumptions. Paternal leakage is rare. The bigger caution is that a maternal tree is not the full history of peoples. Y-chromosome and autosomal DNA must join it.

Commercial "maternal ancestry" tests report a haplogroup, not a caste or a civilisation.

Flow diagram

mtDNA -> Maternal / no recombination
mtDNA -> African diversity deepest
African diversity deepest -> Out of Africa
mtDNA -> One locus only

Conclusion

Mitochondrial DNA gave anthropology a maternal clock and a strong African-origin argument. Cann, Stoneking and Wilson established the maternal African-origin case. Eve is a node in a tree, not a lone first woman, and mtDNA is one line beside nuclear genomes.

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Q5(e) · 10 marks

Foetal origin of adult diseases and contribution of David Barker.

Anthropology GS 1 · 2025 · Culture, Language and Communication

Revision summary

David Barker linked poor foetal growth to later adult heart disease and diabetes.

Hales and Barker's thrifty phenotype says the foetus adapts to scarcity and then mismatches plenty.

This is developmental plasticity, not a single-gene disease.

Indian discussion of thin-fat bodies and urban diets illustrates the mismatch.

The idea joins nutrition, embodiment and political economy.

The constraint is often structural, not a moral failure of mothers.

Introduction

David Barker argued that adult heart disease, stroke and type 2 diabetes can begin in the womb. Poor foetal growth, often marked by low birth weight, programmes the body for a world of scarcity. If later life is calorie-rich, the mismatch becomes disease. This is the foetal origins of adult disease, now often called DOHaD.

Body

Barker's contribution

Using English birth and death records, Barker showed that areas with high infant mortality decades earlier also showed high adult coronary disease. The **thrifty phenotype** idea, developed with **C. N. Hales**, says the foetus adapts: smaller body, altered liver and pancreas, different blood-pressure settings. Those settings help survival if food stays short. They harm if the child later meets cheap sugar, oil and sitting work.

This is developmental plasticity, not a Mendelian defect. It sits beside nutritional anthropology: the plate of the pregnant woman is already political economy.

How anthropologists use it

- **Mechanism:** The uterus is an environment. Placental nutrition, infection, stress and the mother's own childhood shape the foetus. Embodiment is literal here.
- **Indian research:** Physicians such as **C. S. Yajnik** have discussed a "thin-fat" pattern: relatively small birth size with later central fat and diabetes risk. The point is mismatch between a constrained womb and an urban food environment.
- **Inequality:** Low birth weight clusters with caste, class, women's food, anaemia and indoor smoke. Barker's biology does not replace Wolf's political economy. It gives it a body.
- **Current examples:** COVID-19 pregnancy stress, heat and food-price shocks, and the gap between ICDS pregnancy care and actual intra-household allocation are living illustrations of the same hypothesis.

Significance

Foetal origins join biological and social anthropology. They warn that adult lifestyle advice that ignores the first thousand days will miss the poor. They also warn against blaming the mother as a moral failure: the constraint is often structural.

Flow diagram

Womb constraint -> Thrifty phenotype
Thrifty phenotype -> Adult diabetes and heart disease
Later plenty -> Adult diabetes and heart disease
Inequality of maternal diet -> Womb constraint

Conclusion

Barker showed that adult metabolic and cardiovascular disease can be written in foetal growth. The thrifty phenotype is an adaptation to scarcity that becomes a risk in plenty. Anthropology's job is to place that womb inside ecology, culture and inequality, not to stop at birth weight as a number.

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Q6(a) · 20 marks

What are genetic markers? Discuss their applications in understanding population variation, disease association and forensics

Anthropology GS 1 · 2025 · Applications of Anthropology

Revision summary

A genetic marker is a heritable polymorphism that can be read in families or populations.

Classical markers include ABO and proteins. DNA markers include SNPs, STRs, mtDNA and Y haplotypes.

Population applications map variation and movement and undermine typological race.

Disease applications include sickle-cell and malaria, HLA, counselling, and GWAS.

Forensic applications include STR identification, mtDNA from degraded samples, and Y-lineage in mixtures.

Lewontin's within-group diversity and Jeffreys's DNA fingerprinting are central names.

Introduction

A genetic marker is a measurable hereditary character that differs among individuals and can be followed in families or populations. It may be a classical blood-group antigen, a protein variant, or a DNA site such as a SNP or STR. Markers are tools. They are not the same thing as a 'race gene'.

Body

What counts as a marker

Classical markers include ABO and Rh blood groups, HLA types, and protein polymorphisms. **Karl Landsteiner's** ABO system is still the first standard example. **DNA markers now dominate: single-nucleotide polymorphisms (SNPs), short tandem repeats (STRs), mitochondrial haplogroups, and Y-chromosome haplotypes.** **Alec Jeffreys** made hypervariable DNA useful as a fingerprint. **L. L. Cavalli-Sforza** organised classical and then molecular markers into maps of population history. **Richard Lewontin** used similar variation to show that most genetic diversity is within groups, not between continental labels.

- **A good definition:** a marker is polymorphic, heritable, and readable in the lab or the pedigree.

Population variation

- **Markers describe structure:** allele frequencies, genetic distance, and clines. They helped replace typological race with population thinking. Indian anthropology used ABO, MN, PTC and later DNA to study caste, tribe and regional diversity as overlapping frequencies, not as sealed types. mtDNA and Y-chromosome markers add sex-specific histories of movement. The ethical warning is the same as for mtDNA: a haplogroup is not a civilisation.

Disease association

Some markers sit in or near genes that affect disease. Sickle-cell haemoglobin and malaria is the classic anthropological case (**A. C. Allison**). HLA associations with autoimmune disease, and later SNP associations, including GWAS, extend the same logic. Markers also guide counselling when they track a Mendelian locus in a pedigree.

Association is not always causation. Linkage disequilibrium can flag a neighbour gene. Population structure can produce false links if cases and controls are poorly matched.

Forensics

STRs from several loci identify individuals with high discrimination when the sample is good. Markers also exclude suspects and identify remains after disasters. mtDNA helps when hair shafts or degraded bone yield little nuclear DNA, because many copies exist per cell. Y markers can track a paternal line in sexual-assault mixtures. Forensic anthropology still needs bones, context and consent. DNA does not replace osteology.

DNA testing of unidentified dead, or in disputed paternity, is a public application of the same methods.

Flow diagram

Genetic markers -> Population variation
Genetic markers -> Disease association
Genetic markers -> Forensics
Population variation -> Frequencies not races
Disease association -> Sickle cell / GWAS
Forensics -> STRs and mtDNA

Conclusion

Genetic markers are heritable polymorphisms used as instruments. In populations they map variation and history. In medicine they flag disease risk and Mendelian loci. In forensics they identify and exclude. Landsteiner, Jeffreys, Cavalli-Sforza and Lewontin mark the path from blood groups to DNA, and race typology does not follow from markers.

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Q6(b) · 15 marks

"The agenda of biological anthropology became more scientific from the middle of the twentieth century." Justify

Anthropology GS 1 · 2025 · Biological Anthropology.

Revision summary

Earlier physical anthropology often measured skulls and built racial types.

From the mid-twentieth century the field joined the modern synthesis and Washburn's new physical anthropology.

Dating methods and African fossils made evolution a testable chronology.

Genetics and Lewontin's variation argument weakened race as essence.

Field primatology and human adaptability studies added living data.

More scientific means hypotheses and populations, not a claim that the past had no measurements.

Introduction

Before the mid-twentieth century, much physical anthropology measured skulls, built racial types, and ranked groups. From about the 1940s and 1950s the agenda shifted toward evolutionary theory, hypothesis testing, genetics and behaviour. The quote is justified by that shift in names and methods, not by dismissing all earlier measurement.

Body

What had to change

Nineteenth- and early twentieth-century physical anthropology often treated race as a fixed type. Calipers were real; the theory was weak. **Franz Boas** had already attacked fixed-form racism with immigrant head-form studies, but museum typology still dominated many laboratories. The species was sliced more than it was explained.

The scientific turn

- **Modern synthesis: Theodosius Dobzhansky and Ernst Mayr** made population genetics and speciation the language of biology. Humans had to be thought as a variable population, not as a row of types.
- **Washburn's new physical anthropology: Sherwood Washburn** (early 1950s) called for functional anatomy, palaeontology, and primate behaviour under evolutionary questions. Bones were for locomotion and life, not only for racial catalogues.
- **Dating and the fossil record:** Potassium-argon and later radiometric clocks, plus the **Leakey** work at Olduvai, turned human evolution into a dated African narrative rather than a guessing game of missing links.
- **Molecular and genetic methods:** Blood groups, then proteins, then DNA made variation countable. **Lewontin** used that count against race as a biological essence.
- **Field primatology: Jane Goodall, Dian Fossey and Biruté Galdikas**, and earlier Japanese primatology, brought systematic observation of living apes. Behaviour became data, not anecdote.
- **Human biology of adaptation:** The International Biological Programme and work on altitude, heat and cold treated the living body as an experimental and biocultural object (**Baker, Harrison**, and others).

What "more scientific" means here

It means explicit hypotheses, comparable measurement, evolutionary theory, and a willingness to drop race typology when the data refuse it. It does not mean that ethics automatically became perfect. Blood sampling, remains and "tribal" surveys still need critical ethnography.

- **A current continuation is ancient DNA and GWAS:** still scientific, still in need of population ethics.

Flow diagram

Old agenda -> Racial types
Mid-century turn -> Synthesis / Washburn
Mid-century turn -> Genetics and dating
Mid-century turn -> Primates and adaptation
Synthesis / Washburn -> Populations not types

Conclusion

The agenda became more scientific when biological anthropology joined the modern synthesis, replaced types with populations, dated fossils, counted genes, and watched primates as well as skulls. Washburn, Dobzhansky, the Leakeys and Lewontin justify the quote. Measurement had existed before; evolutionary explanation and testable method are what changed.

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Q6(c) · 15 marks

Describe briefly the theoretical perspectives in linguistic anthropology to explain the relationship of culture, language and thought

Anthropology GS 1 · 2025 · Linguistic Anthropology.

Revision summary

Boas, Sapir and Whorf linked language to habitual thought. Strong determinism is rejected; weak relativity remains.

Berlin and Kay's colour research showed universals and language-specific splits.

Hymes's ethnography of speaking studies who speaks how, when and to whom.

Silverstein and language-socialisation work treat meaning as social and learned.

Kinship terms and speech events are better illustrations than exotic mind-prisons.

Chomsky's innateness is a neighbouring foil, not the centre of this anthropological question.

Introduction

Linguistic anthropology asks whether the language we speak is only a tool for labelling a ready-made world, or whether it also organises what we notice and how we think. The field does not rest on one slogan. It offers a set of perspectives from **Boas** and **Sapir** to **Whorf**, **Hymes**, and later cognitive and practice approaches.

Body

Boas, Sapir and Whorf

Franz Boas treated language as a window on culture and insisted that each language be described in its own terms. **Edward Sapir** argued that language is a social guide to reality. **Benjamin Lee Whorf**, using Hopi and English contrasts, claimed that grammatical categories can channel habitual thought. This is linguistic relativity.

The strong version - language determines thought, so speakers live in sealed worlds - is not accepted. The weak version - language biases attention and memory - still organises research. Colour-term work by **Brent Berlin** and **Paul Kay** showed both universals and language-specific splits, which cooled the strongest Whorfian claims without killing the question.

- **Kinship vocabularies are an anthropological example:** a language that splits maternal and paternal uncles trains a social eye that English "uncle" blurs. That is culture, language and thought in one kinship term.

Language as social action

- **Dell Hymes** moved the field from inner thought to the **ethnography of speaking**: who may speak, in which code, on which occasion. Competence is cultural, not only grammatical. **Mikhail Bakhtin** (read into anthropology) and later **Michael Silverstein** treated indexicality: words point to context, rank and identity.

Here thought is less a private mental grammar and more a public skill. A court oath, a Sanskrit verse, factory Hindi, and an English-medium classroom are different speech events in the same country.

Constraint, interaction and practice

Noam Chomsky's universal grammar is a neighbouring theory of an innate language faculty. Linguistic anthropologists usually reply that the interesting variation for culture sits in use, ideology and socialisation, not only in deep syntax. **Elinor Ochs** and language-socialisation studies show children acquiring culture as they acquire clauses.

Pierre Bourdieu's notion of legitimate language links accent to class. Thought here includes what one dares to say.

Emoji, code-mixing, or English-medium schooling are new channels for old questions about whose language counts as knowledge.

How to close the relationship

Language is a cultural system, a cognitive habit and a field of power. Relativity without social use is too mental. Speech-event analysis without cognition is too thin. The relationship is that joint.

Flow diagram

Language -> Relativity / Whorf
Language -> Speech events / Hymes
Language -> Indexicality and power
Relativity / Whorf -> Habitual thought
Speech events / Hymes -> Culture in use

Conclusion

The main perspectives are Boasian description, Sapir-Whorf relativity in a weak form, Hymes's ethnography of speaking, and later work on indexicality and language socialisation. Culture, language and thought meet in kinship terms, colour words, and who is allowed to speak. Grammar does not trap a people in a sealed world forever.

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Q7(a) · 20 marks

How the study of variation in forms of marriage led to rethinking on the concepts of social reproduction, kinship and family?

Anthropology GS 1 · 2025 · Family

Revision summary

Marriage forms include woman-marriage, ghost marriage, polyandry, visiting unions, same-sex marriage and medically assisted parenthood.

Evans-Pritchard's Nuer and Nayar ethnography already split sex, residence and legitimacy.

Schneider and Strathern treated kinship as cultural assignment, not bare biology.

Family is not universally the Parsons nuclear unit.

Social reproduction is how children, labour and status are placed across generations, as Engels and later feminist anthropologists argued.

Living examples include IVF, surrogacy debates and chosen families.

Introduction

If marriage were only one man, one woman and their legitimate children, kinship would be a simple household chart. Ethnography found woman-marriage, ghost marriage, walking marriage, polyandry, same-sex unions and chosen families. That variation forced anthropology to reopen what kinship, family and social reproduction mean.

Body

Variation in forms of marriage

E. E. Evans-Pritchard described Nuer woman-marriage, in which a woman can take a wife and the children belong to her lineage. Nuer ghost marriage can attach children to a dead man. **Tibetan and Himalayan polyandry** (as in **Prince Peter** and later ethnographers) puts brothers in one marital set. The Mosuo "walking marriage" of southwest China stresses visiting unions more than a co-resident husband. **Lévi-Strauss** had already treated marriage as alliance between groups, not as a private couple. **Kathleen Gough** on Nayar unions in Kerala troubled the idea of a universal resident father.

Contemporary law and practice add civil same-sex marriage, live-in partnerships, and IVF parenthood. "Marriage" is a bundle of rights - sexual access, legitimacy, labour, residence - that can be split and recombined.

Rethinking kinship

David Schneider argued that American kinship is a cultural system of blood and law, not a universal biology. If Nuer children belong through cattle and woman-marriage, then descent is a social assignment. **Marilyn Strathern** on new reproductive technologies showed that a genetic parent, a gestational parent and a caring parent need not be one person. **Janet Carsten** on relatedness in Langkawi stressed feeding and living together. Pedigree and genealogy must stay distinct here: biology does not automatically equal kinship.

Rethinking family

The nuclear family of **Talcott Parsons** cannot be the human default once joint families, matrifocal households (**Oscar Lewis**, Caribbean files), and queer chosen families are in view.

Family is the set of people who share consumption, care and legitimacy under a local rule, not a timeless father-mother-child molecule.

Rethinking social reproduction

Social reproduction means how a society replaces people, labour and status across generations. **Friedrich Engels** tied family form to property. Later feminist anthropology (**Gayle Rubin**, **Claude Meillassoux**, **Sylvia Yanagisako**) asked how marriage organises women's labour and the next generation's belonging. If marriage can be woman-to-woman, or visiting, or medically assisted, then reproduction is not only heterosexual coitus inside a recognised couple. It is the social arrangement that places a child in a line of rights.

A current Indian illustration is surrogacy law, live-in recognition in some judgments, and hijra or chosen-family care.

Flow diagram

Marriage variation -> Kinship as social
Marriage variation -> Family as care unit
Marriage variation -> Social reproduction of rights
Kinship as social -> Schneider / Strathern

Conclusion

Variation in marriage showed that kinship is assigned, family is a local care unit, and social reproduction is the placing of children and labour in a structure of rights. Evans-Pritchard, Schneider, Strathern and feminist kinship theory are the spine. The couple-and-blood model is one cultural case, not the definition.

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Q7(b) · 15 marks

What are the major theories proposed in support of the origin of food production? How the change in subsistence economy brought revolution during this period?

Anthropology GS 1 · 2025 · Neolithic

Revision summary

Childe saw a Neolithic revolution driven by post-glacial crowding around oases.

Braidwood placed origins in hilly flanks where wild cereals already grew.

Binford and Cohen stressed packing and population pressure on the margins.

Bender and Hodder stressed social and symbolic demand.

Mehrgarh is the South Asian early-farming example.

The revolution is surplus, sedentism, labour and inequality, not automatic better health.

Introduction

Food production means the deliberate cultivation of plants and the herding of animals. It began independently in several regions after the Pleistocene. No single cause is agreed. **V. Gordon Childe** called the shift a Neolithic revolution. Later theories kept the importance and argued about the trigger.

Body

Major theories of origin

- **Oasis or desiccation (Childe):** As climate dried after the Ice Age, people, plants and animals crowded around water. Proximity produced domestication. The climate engine is too simple, but Childe named the problem.
- **Hilly flanks (Robert Braidwood):** Domestication happened where wild wheats and pulses already lived, in the nuclear zones of the Near East, among people who knew those species well. Excavations in the Zagros and related flanks were his test.
- **Marginal or packing models (Lewis Binford):** As forager populations packed the best habitats, some groups on the edge had to intensify. Cultivation is a response to stress, not a gift of the richest niche.
- **Population pressure (Mark Cohen):** Growing numbers forced more food per unit of land. Farming is not invented in plenty; it is accepted despite more work.
- **Social and symbolic theories: Barbara Bender** and later **Ian Hodder** (Çatalhöyük) argued that feasting, ritual and household competition could pull intensification before a purely caloric need. People may have produced to feed social ambition, not only empty stomachs.
- **Climate pulses:** Younger Dryas cold and later Holocene stability are often used as a background. Climate is a condition, not a full theory by itself.
- **South Asia's Mehrgarh is the regional example:** early barley, wheat and cattle in Baluchistan, showing that the revolution is not only a Fertile Crescent story.

Why it was a revolution

The subsistence change reorganised society, not only the menu.

- **Sedentism and surplus:** Stored grain supports larger, more permanent settlements.

- **Population and labour:** More children can be raised; more hours go into fields. Health did not automatically improve. Cohen and later bioarchaeology found more infection and dental wear in some early farming series.
- **Property and inequality:** Fields, herds and stored food can be owned, inherited and fought over. Social ranking becomes easier than in many mobile forager bands.
- **Technology and ritual:** Pottery, ground stone, village shrines and, later, metals sit on this base. Childe's "revolution" is still usable if we mean a cluster of linked changes, not a one-year miracle.
- **A living echo:** Today's debates on millets, MSP and farm laws are not Neolithic, but they show that who controls food still organises power.

The change is revolutionary because it created the demographic and political conditions for villages, states and, eventually, cities. It was not instant progress in health or freedom.

Flow diagram

Origin theories -> Childe climate
Origin theories -> Braidwood flanks
Origin theories -> Binford / Cohen pressure
Origin theories -> Social / Hodder
Revolution -> Sedentism surplus inequality

Conclusion

Origin theories divide between climate crowding, nuclear-zone knowledge, population packing, and social demand for feasts and status. Childe, Braidwood, Binford, Cohen and Hodder are the set. The revolution is sedentism, surplus, inequality and a new labour regime, not a happier diet by itself.

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Q7(c) · 15 marks

Critically discuss the centrality of the African continent in the narrative of human evolution

Anthropology GS 1 · 2025 · Cultural Evolution

Revision summary

Darwin predicted an African origin from living great apes.

Dart, the Leakeys and Johanson built the fossil case; Oldowan tools sit in that African early record.

mtDNA and autosomal diversity place living humans' deepest roots in Africa, as in Stringer's recent African origin model.

Eurasia still holds erectus, Neanderthals, Denisovans and later symbolic cultures.

Ancient DNA shows limited mixing after exit, not a separate living origin.

Centrality means the trunk of the story, not that only one gorge matters or that Asia is empty.

Introduction

Africa is central to the story of human evolution because the deepest hominin fossils, the earliest stone tools in current consensus, and the genetic roots of living people are African.

Charles Darwin already guessed an African origin from living apes. The last century of fieldwork turned that guess into a dated record. Centrality is an evidence claim, not a political compliment.

Body

The positive case

- **Fossils:** **Raymond Dart's** Taung child placed australopithecines in South Africa. East African sites associated with the **Leakeys, Donald Johanson's** Lucy (*Australopithecus afarensis*) at Hadar, and later finds such as *Ardipithecus* and *Homo habilis* / early *Homo* keep the Pliocene and early Pleistocene story African. Jebel Irhoud, Omo and Herto are standard sites for early *Homo sapiens* anatomy in Africa.
- **Archaeology:** Oldowan tools from East African contexts sit at the base of the technological narrative. Later Acheulean also has a deep African record.
- **Genetics:** Cann, Stoneking and Wilson's mtDNA, plus autosomal diversity, show the deepest living-human variation in Africa and a recent dispersal out of it. **Chris Stringer's** recent African origin model is the fossil-and-anatomy partner of that genetics.

This is why textbooks say "cradle". The phrase is fair if it means origin and early diversification, not if it means nothing important happened elsewhere.

Critical qualifications

- **Not only South or East:** The record is uneven because of preservation, politics and research money. Central and West Africa are less visible. Centrality of the continent is not the same as centrality of Olduvai alone.
- **Eurasia is not a footnote:** *Homo erectus* in Java and China, Dmanisi in Georgia, Neanderthals in Europe, Denisovans in Asia, and later Upper Palaeolithic symbolism are real evolutionary chapters. Multiregionalism associated with **Milford Wolpoff** overplayed continuity of living races outside Africa, but it was right to refuse an empty Eurasia.

- **Mixing after exit:** Ancient DNA (**Svante Pääbo**) shows limited Neanderthal and Denisovan contribution to non-African peoples. Africa remains the source of the living sapiens trunk; Eurasia is where some branches met archaic cousins.
- **Many-Africans models:** Some recent work speaks of several African regions contributing to H. sapiens, not one Garden of Eden. That still keeps the continent central. It drops a single-valley myth.

Museum debates over African fossils and who narrates them are politics of science, not a reason to move the origin to Europe.

Flow diagram

Africa -> Deep hominin fossils
Africa -> Living human genetic roots
Africa -> Early stone tools
Eurasia -> Erectus Neanderthal Denisovan
Living human genetic roots -> Out of Africa plus later mixing

Conclusion

Africa is central because fossils, tools and genes place our origins and early diversification there. The critique is against a single-site myth and against ignoring Eurasian later evolution and limited admixture. Darwin, Dart, the Leakeys, Johanson and Stringer carry the positive case; Wolpoff and Pääbo help the qualification.

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Q8(a) · 20 marks

How the theories of postmodernism are relevant in promoting social justice and empowerment of marginalised communities?

Anthropology GS 1 · 2025 · Post-modernism in anthropology.

Revision summary

Postmodern anthropology doubts grand narratives and treats ethnography as a positioned text, as in Clifford and Marcus.

Foucault links knowledge to power. Said and Spivak ask who may represent the marginalised.

These tools support voice, anti-essentialism, participatory methods and queer or Dalit or Adivasi self-description.

Current examples include Forest Rights claims, testimony movements and counter-mapping.

The limit is that style without land and law does not empower.

Join voice to political economy.

Introduction

Postmodern theories in anthropology doubted grand, single stories told by a confident outsider. They asked who has the right to represent whom. That doubt is useful for social justice when it returns voice, history and power to people who were written as silent 'tribes' or 'cases'.

Body

What the theories actually say

Jean-François Lyotard defined the postmodern as suspicion toward grand narratives. **Michel Foucault** treated knowledge as entangled with power: the clinic, the prison and the census make kinds of people. **Jacques Derrida's** deconstruction, used cautiously, shows how a text privileges one term over another. In anthropology, **James Clifford** and **George Marcus** in *Writing Culture* made ethnography itself a literary and political act. **Renato Rosaldo**, **Lila Abu-Lughod** ("writing against culture"), and **Gayatri Chakravorty Spivak** on the subaltern asked whether the oppressed can speak in our genres. **Edward Said's** *Orientalism* is the neighbouring critique of how "the East" was authored.

These are not a call to invent facts. They are a call to show the author's position, to allow several voices, and to drop the god's-eye monograph.

How that promotes justice and empowerment

- **Voice:** Polyphony and life-history methods let Dalit, Adivasi, Muslim, disabled and queer narrators sit inside the text instead of as illustrations of a caste "system".
- **Against essential culture:** If "the tribe" is a colonial category, empowerment can mean land titles, **Forest Rights Act** claims, and bilingual education rather than preservation as a museum piece.
- **Reflexivity in development:** A scheme that measures women only as fertility numbers repeats **Foucault's** biopolitics. Participatory appraisal, counter-mapping of forest commons, and community radio are practical cousins of postmodern doubt.
- **Gender and sexuality:** Once kinship is not a natural nuclear law, hijra, transgender and chosen-family lives can be written as kinship, not as deviance.

- **Current examples:** MeToo testimonies, anti-CAA street archives, and Adivasi opposition to a mine all produce knowledge from below. Those accounts are data, not noise.

Paulo Freire is not a postmodern philosopher, but his pedagogy of the oppressed is often joined to this political aim in applied work.

A necessary limit

Endless textual play can stall land and wages. Marginalised communities usually want resources and rights, not only a more stylish ethnography. Postmodern tools decentre the expert; political economy, as in Wolf, reconnects voice to structure. Justice needs both.

Flow diagram

Postmodern critique -> Knowledge and power
Postmodern critique -> Many voices
Many voices -> Justice claims
Knowledge and power -> Against essential tribe
Justice claims -> Limit: rights and resources too

Conclusion

Postmodern theories help justice when they expose how knowledge ranks people, and when they open the text to subaltern voice. Clifford, Marcus, Foucault, Said and Spivak supply the method. Empowerment still needs land, law and livelihood. The theories are a method of listening, not a substitute for redistribution.

Open WRAP page — <https://wrapexams.com/upsc/mains-answers/anthropology-gs-1/2025/how-the-theories-of-postmodernism-are-relevant-in-promoting-social-justice-and-empowerment-of-marginalised-communities/>

Q8(b) · 15 marks

'Genome-wide Disease Association Studies (GWAS) advanced our understanding of health and disease.' Discuss

Anthropology GS 1 · 2025 · Genetic imprints in human disease, genetic screening, genetic counseling, human DNA profiling, gene mapping and genome study.

Revision summary

GWAS tests common SNPs across the genome for association with a trait or disease.

It showed that many adult diseases are polygenic and pointed to biological pathways.

Polygenic scores are research tools, not fate.

Limits include European-ancestry bias, missing heritability, and misuse as race biology.

Environment, foetal programming and inequality still explain a large share of health.

GWAS belongs with genetic markers and with non-Mendelian inheritance.

Introduction

A genome-wide association study, or GWAS, scans many common DNA markers across the genome to see which ones are statistically more frequent in people with a disease or trait than in people without it. It advanced medicine by finding many small genetic clues at once. It did not find one gene for 'being ill'.

Body

What GWAS does

After the Human Genome Project and HapMap-style catalogues of SNPs, researchers could test hundreds of thousands of markers in large samples. Hits appear as peaks on a Manhattan plot. **Wellcome Trust** case-control studies and later consortia on height, schizophrenia, type 2 diabetes and autoimmune disease are the textbook wave. The method is an application of genetic markers at genomic scale.

GWAS is good at common variants of small effect. It is weaker at rare variants of large effect, which need sequencing families or other designs.

How understanding advanced

- **Architecture of complex disease:** Heart disease, diabetes and many psychiatric traits are polygenic, which matches non-Mendelian inheritance. Barker's foetal environment still matters; GWAS adds a layer of inherited liability, not a replacement.
- **Biology clues:** Hits can point to pathways (lipid metabolism, immune signalling) even when each SNP does almost nothing alone.
- **Pharmacogenomics and risk scores:** Polygenic scores try to rank risk. They are research tools. They are not destiny, especially when diet, infection and inequality are strong.
- **Infectious disease:** Host-genetics GWAS, including work during COVID-19, asked why severity differs. That is biological anthropology in a hospital key: variation, not blame.

Genome India and other non-European projects exist because the first decade of GWAS over-sampled European ancestry.

Limits an anthropologist must name

- **European bias:** Predictions fail or weaken in other populations. This is a scientific and justice problem.
- **Missing heritability:** Even many hits leave much family resemblance unexplained. Environment, rare variants and gene-gene interaction remain.
- **Race misuse:** A GWAS hit is not a racial essence. Lewontin's lesson still applies.
- **Ethics:** Consent, feedback of risk, and insurance fear. Tribal and small-community sampling repeats older extractive genetics unless governance is real.

GWAS advanced understanding by mapping the polygenic landscape of common disease. It did not close the biocultural file.

Flow diagram

GWAS -> Many SNPs
Many SNPs -> Complex disease map
Complex disease map -> Small effects
Complex disease map -> European sample bias
Complex disease map -> Environment still matters

Conclusion

GWAS showed that many common illnesses are influenced by many small DNA differences and pointed to biological pathways. The anthropological discussion is population bias, small effects, and the continuing force of environment and inequality. It is a powerful marker method, not a new racial science.

Open WRAP page — <https://wrapexams.com/upsc/mains-answers/anthropology-gs-1/2025/genome-wide-disease-association-studies-gwas-advanced-our-understanding-of-health-and-disease-discuss/>

Q8(c) · 15 marks

Examine the utility of human remains in forensic analysis. Discuss the facial reconstruction technique

Anthropology GS 1 · 2025 · Applications of Anthropology

Revision summary

Forensic anthropology estimates sex, age, stature and trauma from bones and teeth, and it records context.

Krogman and Stewart standardised osteological identification. DNA STRs and dentistry confirm identity when references exist.

Clyde Snow's human-rights cases show remains as testimony.

Facial reconstruction uses tissue-depth markers, as in Gerasimov and Gatliff, now often with CT and 3D prints.

The face is an approximation to prompt recognition, not a certain portrait.

Ethics include family consent and no racial or caste over-claim.

Introduction

Forensic anthropology reads human remains to help the law answer who a person was and what happened to the body. Bones, teeth and, where available, DNA are the evidence. Facial reconstruction is one specialised technique for suggesting a face when identity is unknown. It is an aid to recognition, not a photograph from the grave.

Body

Utility of human remains

Wilton Krogman and **T. Dale Stewart** built the modern osteological toolkit. In the field or mortuary, the anthropologist first asks whether the remains are human, how many individuals are present, and how long they have been dead.

- **Biological profile:** Pelvis and skull inform sex estimation. Teeth and bone fusion inform age at death. Long-bone length informs stature. These are estimates with error, stronger for adults than for children, and never a caste certificate.
- **Ancestry estimation** is the most abused limb. Metric and morphoscopic methods speak in probabilities about continental affinities. They must not be sold as a racial ID.
- **Trauma and taphonomy:** Blade, bullet, blunt force, burning and animal chewing can be distinguished if the bone is read with C. K. Brain's caution from palaeoanthropology: not every mark is a weapon.
- **Context:** Mass disasters, unmarked graves, and unidentified dead on Indian railway lines or after floods need osteology plus scene recording. DNA STRs confirm identity when a family reference exists. Odontology and surgical implants help.

Clyde Snow's work with the disappeared in Argentina showed the political utility: remains can testify when the state denied the death. Disaster-victim identification after tsunamis and air crashes is the humanitarian twin.

Facial reconstruction

The technique builds a face on a skull using average tissue-depth markers at standard points, then models muscle and skin. **Mikhail Gerasimov** developed a well-known anatomical

method in Russia. **Betty Pat Gatliff** and colleagues developed an American clay method. Today CT scans and 3D printing often replace purely manual clay.

It can produce a recognisable approximation that jogs a relative's memory or a public appeal. It cannot recover exact eyes, hair, expression or age-related fat. Two reconstructors will not make identical faces. When DNA or dental records exist, they outrank a clay likeness.

Police 3D reconstructions of unidentified skulls, sometimes released in newspapers, are investigative leads, not courtroom certainty.

Ethics

Consent of families, dignity of the dead, and caution with caste or community labelling are part of the method. Display of remains for teaching is a separate ethical file from forensic casework.

Flow diagram

Human remains -> Biological profile
Human remains -> Trauma and taphonomy
Human remains -> DNA and dentistry
Skull -> Facial reconstruction
Facial reconstruction -> Lead not photograph

Conclusion

Human remains give a biological profile, a trauma history and, with DNA, a possible name. Facial reconstruction is a tissue-depth approximation used to prompt recognition. Krogman, Stewart, Gerasimov and Gatliff developed the toolkit. Error, taphonomy and ethics belong in the same account as the technique.

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Compiled answer key

Last pages of this pack. Each question links to the WRAP model answer on wrapexams.com.

ask@wrapexams.com · wrapexams.com

Q1(a) 10 marks	Q1(b) 10 marks	Q1(c) 10 marks	Q1(d) 10 marks
Q1(e) 10 marks	Q2(a) 20 marks	Q2(b) 15 marks	Q2(c) 15 marks
Q3(a) 20 marks	Q3(b) 15 marks	Q3(c) 15 marks	Q4(a) 20 marks
Q4(b) 15 marks	Q4(c) 15 marks	Q5(a) 10 marks	Q5(b) 10 marks
Q5(c) 10 marks	Q5(d) 10 marks	Q5(e) 10 marks	Q6(a) 20 marks
Q6(b) 15 marks	Q6(c) 15 marks	Q7(a) 20 marks	Q7(b) 15 marks
Q7(c) 15 marks	Q8(a) 20 marks	Q8(b) 15 marks	Q8(c) 15 marks

Question-wise key

Q1(a) · 10 marks Solution

Q1(b) · 10 marks Solution

Q1(c) · 10 marks Solution

Q1(d) · 10 marks Solution

Q1(e) · 10 marks Solution

Q2(a) · 20 marks Solution

Q2(b) · 15 marks Solution

Q2(c) · 15 marks Solution

Q3(a) · 20 marks Solution

Q3(b) · 15 marks Solution

Q3(c) · 15 marks Solution

Q4(a) · 20 marks Solution

Q4(b) · 15 marks Solution

Q4(c) · 15 marks Solution

Q5(a) · 10 marks Solution

Q5(b) · 10 marks Solution

Q5(c) · 10 marks Solution

Q5(d) · 10 marks Solution

Q5(e) · 10 marks Solution

Q6(a) · 20 marks Solution

Q6(b) · 15 marks Solution

Q6(c) · 15 marks Solution

Q7(a) · 20 marks Solution

Q7(b) · 15 marks Solution

Q7(c) · 15 marks Solution

Q8(a) · 20 marks Solution

Q8(b) · 15 marks Solution

Q8(c) · 15 marks Solution

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