

Annotated Bibliography & Glossary

Adams, Jenny L.

1999 Refocusing the Role of Food-Grinding Tools as Correlates for Subsistence Strategies in the U.S. Southwest. **American Antiquity** 64(3):475–498. [focuses on replication, use wear, residues]

2002 **Ground Stone Analysis: A Technological Approach.** University of Utah Press, Salt Lake City. [discusses analysis and classification based on design, manufacture and use]

Addington, Lucille

1986 **Lithic Illustration: Drawing Flaked Stone Artifacts for Publication.** University of Chicago Press, Chicago, IL.

Amick, Daniel S., and Raymond P. Mauldin (editors)

1989 **Experiments in Lithic Technology.** BAR International Series 528. British Archaeological Reports, Oxford. [includes several examples of replication experiments]

Andrefsky, William, Jr.

1994 Raw-Material Availability and the Organization of Technology. **American Antiquity** 59(1):21–34.

2005 **Lithics: Macroscopic Approaches to Analysis.** 2nd ed. Cambridge Manuals in Archaeology. Cambridge University Press, New York. [instructional textbook on lithic analysis from the perspective of western USA biface technology]

2006 Experimental and Archaeological Verification of an Index of Retouch for Hafted Bifaces. **American Antiquity** 71(4):743–757. [examines resharpening, reuse, and curation issues]

Bamforth, Douglas B.

2006 The Windy Ridge Quartzite Quarry: Hunter-Gatherer Mining and Hunter-Gatherer Land Use on the North American Continental Divide. **World Archaeology** 38(3):511–527. [on one of the largest Colorado sites]

Barnett, Franklin

- 1991 **Dictionary of Prehistoric Indian Artifacts of the American Southwest.** Northland Publishing Co., Flagstaff, AZ.

Barton, C. Michael

- 1996 Beyond the Graver: Reconsidering Burin Function. **Journal of Field Archaeology** 23(1):111–125. [well-illustrated, but specific topic]

Benedict, James B.

- 1992 Sacred Hot Springs, Instant Patina. **Plains Anthropologist** 37(138): 1–6. [considers both natural and cultural modifications of lithics]

Black, Kevin D.

- 2000 Lithic Sources in the Rocky Mountains of Colorado. In: **Intermountain Archaeology**, edited by David B. Madsen and Michael D. Metcalf, pp. 132–147. University of Utah Anthropological Papers No. 122. Salt Lake City, UT. [includes distribution maps for selected materials]

Bradley, Bruce A.

- 1975 Lithic Reduction Sequences: a Glossary and Discussion. In: **Lithic Technology: Making and Using Stone Tools**, edited by Earl Swanson, pp. 5–14. Mouton Publishers, The Hague. [defines manufacturing steps, as illustrated in Handout 4]

Callahan, Errett

- 1979 The Basics of Biface Knapping in the Eastern Fluted Point Tradition: A Manual for Flintknappers and Lithic Analysts. **Eastern States Archaeological Federation Paper** No. 7. [may be difficult to find; see illustrations in Handout 4]

Cassells, E. Steve

- 1997 **The Archaeology of Colorado.** Revised ed. Johnson Books, Boulder, CO. [good illustrations of representative artifacts]

Cattaneo, C., K. Gelsthorpe, P. Phillips, and R. J. Sokol

- 1993 Blood Residues on Stone Tools: Indoor and Outdoor Experiments. **World Archaeology** 25(1):29–43.

Church, Tim, Julie E. Francis, and Cherie Haury

- 1994 Lithic Resource Studies: A Sourcebook for Archaeologists. **Lithic Technology Special Publication** No. 3. Tulsa, OK.

Collins, Michael B.

- 1975 Lithic Technology as a Means of Processual Inference. In: **Lithic Technology: Making and Using Stone Tools**, edited by Earl Swanson, pp. 15–34. Mouton Publishers, The Hague. [compare to Bradley for manufacturing steps, as illustrated in Handout 4]

Cotterell, Brian, and Johan Kamminga

- 1987 The Formation of Flakes. **American Antiquity** 52(4):675–708. [a very technical study]

Crabtree, Don E.

- 1999 An Introduction to Flintworking. 3rd ed. **Occasional Papers of the Idaho Museum of Natural History** No. 28. Pocatello, ID. [good introduction, but his use of terms differs from many others]

Dockell, John E.

- 1997 Wear Traces and Projectile Impact: A Review of the Experimental and Archaeological Evidence. **Journal of Field Archaeology** 24(3):321–331. [provides data to help determine function of hafted bifaces]

Fagan, Brian M.

- 2009 **In the Beginning: An Introduction to Archaeology**. 12th ed. Prentice Hall, Upper Saddle River, NJ. [Chapter 11 includes information on stone tools and technology]

Flenniken, Jeffrey J.

- 1984 The Past, Present, and Future of Flintknapping: An Anthropological Perspective. **Annual Review of Anthropology** 13:187–203.

Fratt, Lee, and Jenny L. Adams (coordinators)

- 1993 New Trends in Ground Stone Research: It's Not the Same Old Grind. **The Kiva** 58(3):313–428. [many articles on various tool classes]

Frison, George C., and Bruce Bradley

- 1980 **Folsom Tools and Technology at the Hanson Site, Wyoming**. University of New Mexico Press, Albuquerque, NM. [good technical analysis]

Gerhardt, Kim (compiler)

- 2001 Lithic Source Materials Classification Standards. Ms. with CD on file, Bureau of Land Management, Anasazi Heritage Center, Dolores, CO. [describes, with illustrations, the geological source formations and materials in southwestern Colorado]

Gunnerson, James H.

- 1987 **Archaeology of the High Plains**. BLM-Colorado, Cultural Resource Series No. 19. Denver, CO. [appendix illustrates projectile points of eastern Colorado]

Hall, Christopher T., and Mary Lou Larson (editors)

- 2004 **Aggregate Analysis in Chipped Stone**. University of Utah Press, Salt Lake City.

Hayden, Brian (editor)

- 1979 **Lithic Use-Wear Analysis**. Academic Press, New York. [good but technical collection of papers on various aspects of analysis]

Hester, Thomas, and Robert Heizer

- 1973 Bibliography of Archaeology I: Experiments, Lithic Technology and Petrography. **Addison-Wesley Module** No. 29, Reading, MA.

Holmer, Richard N.

- 1993 Common Projectile Points of the Intermountain West. In: **Anthropology of the Desert West**, edited by Carol J. Condie and Don D. Fowler, pp. 89–115. Reprint ed. University of Utah Press, Salt Lake City, UT. [includes western Colorado types]

Honea, Kenneth

- 1965 A Morphology of Scrapers and Their Methods of Production. **Southwestern Lore** 31(2):25–39. [your Handout #6]

- 1983 Lithic Technology: An International Annotated Bibliography. **Lithic Technology Special Publication** No. 2. University of Texas, San Antonio, TX.

Howard, Calvin D.

- 2006 Pedogenic Minerals as Artifact Antiquity Indicators. **Plains Anthropologist** 51(197):101–104.

- Hyland, D. C., J. M. Tersak, J. M. Adovasio, and M. I. Siegel
 1990 Identification of the Species of Origin of Residual Blood on Lithic Material. **American Antiquity** 55(1):104–112. [case study on artifacts from the Shoop Paleoindian site, Pennsylvania]
- Irwin, Henry T., and H. M. Wormington
 1970 Paleo-Indian Tool Types in the Great Plains. **American Antiquity** 35(1):24–34. [still useful summary of early stone tools]
- Keeley, Lawrence H.
 1980 **Experimental Determination of Stone Tool Uses**. University of Chicago Press, Chicago, IL. [a prominent recent replication study]
- Kooyman, Brian P.
 2000 **Understanding Stone Tools and Archaeological Sites**. University of New Mexico Press, Albuquerque. [comprehensive overview covers a range of theoretical, methodological and analytical techniques]
- Kornfeld, Marcel, George C. Frison, and Mary Lou Larson
 2010 **Prehistoric Hunter-Gatherers of the High Plains and Rockies**. 3rd ed. Left Coast Press, Walnut Creek, CA. [mostly Wyoming, but includes lithics found in northern Colo.]
- Landt, Matthew J., and Jenn Mueller
 2004 Prehistoric Bedrock Mortars in Southeastern Utah. **Utah Archaeology** 17:33–45.
- Lohse, E. S., and D. Sammons
 2000 **Digital Stones: A Guide to Stone Tool Analysis**. CD-Rom for Windows PCs. Idaho Museum of Natural History, Pocatello, ID. [virtual analysis designed to simulate hands-on laboratory training]
- Luedtke, Barbara E.
 1992 **An Archaeologist's Guide to Chert and Flint**. UCLA Institute of Archaeology, Archaeological Research Tools 7. Los Angeles, CA. [details on the nature and origins of chert]
- Marlar, Richard A., Kathryn Puseman, and Linda Scott Cummings
 1995 Protein Residue Analysis of Archaeological Materials: Comments on Criticisms and Methods. **Southwestern Lore** 61(2):27–37. [technical review with recommended sample collection methods]

Meloy, Ellen

- 2003 **The Anthropology of Turquoise: Reflections on Desert, Sea, Stone, and Sky.** Reprint ed. Vintage Books, New York. [some lithics are more than just rocks...]

Miller, James C.

- 2010 Lithic Resources. In: **Prehistoric Hunter-Gatherers of the High Plains and Rockies**, by Marcel Kornfeld, George C. Frison, and Mary Lou Larson, pp. 553–598. 3rd ed. Left Coast Press, Walnut Creek, CA. [very good but technical summary of regional sources]

Newman, M., and P. Julig

- 1989 The Identification of Protein Residues on Lithic Artifacts from a Stratified Boreal Forest Site. **Canadian Journal of Archaeology** 13: 119–132. [explains methods and principles of cross-over electrophoresis applied to lithics from Cummins site in southern Ontario]

Nordenskiöld, Gustav

- 1979 **The Cliff Dwellers of the Mesa Verde.** Reprint of the 1893 edition. Rio Grande Press, Glorieta, NM. [many photos of stone artifacts]

Oakley, Kenneth

- 1976 **Man the Tool-Maker.** University of Chicago Press, Chicago. 6th ed. [brief summary of Old World tools, with technology discussion]

Odell, George H.

- 1996 editor. **Stone Tools: Theoretical Insights into Human Prehistory.** Plenum Publishing, New York. [wide geographic & topical coverage]

- 2004 **Lithic Analysis.** Manuals in Archaeological Method, Theory and Technique. Springer, New York. [very comprehensive review]

- 2009 compiler. **Archaeological Lithic Analysis: Readings from American Antiquity and Latin American Antiquity.** SAA Press, Washington, D.C. [a compendium of articles by numerous experts in the field]

Odell, George H., and Frank Cowan

- 1986 Experiments with Spears and Arrows on Animal Targets. **Journal of Field Archaeology** 13(2):195–212. [good review and experimentation]

Patterson, L. W., and J. B. Sollberger

1979 Water Treatment of Flint. **Lithic Technology** 8(3):50–51.

Plew, Mark, J. Woods, and Max Pavesic (editors)

1985 **Stone Tool Analysis: Essays in Honor of Don E. Crabtree**. University of New Mexico Press, Albuquerque. [mostly technical articles]

Rapp, George

2009 **Archaeomineralogy**. 2nd ed. Natural Science in Archaeology series. Springer, New York. [broad coverage includes rocks & minerals in ceramics, building stone, salts, etc.]

Renaud, E. B.

1960 Classification and Description of Indian Stone Artifacts. **Southwestern Lore** 26(1):1–36. [your Handout #9]

Shackley, M. Steven

2005 **Obsidian: Geology and Archaeology in the North American Southwest**. University of Arizona Press, Tucson. [on obsidian sourcing studies; also see his web site at www.swxrflab.net]

Semenov, S. A.

1976 **Prehistoric Technology**. Barnes and Noble, New York. [translation from the Russian classic; one view to contrast with Crabtree et al.]

Shott, Michael J.

1994 Size and Form in the Analysis of Flake Debris: Review and Recent Approaches. **Journal of Archaeological Method and Theory** 1(1):69–110. [very good, but technical, review of debitage analyses]

1997 Stones and Shafts Redux: The Metric Discrimination of Chipped-Stone Dart and Arrow Points. **American Antiquity** 62(1):86–101. [statistical study of projectile point attributes using archaeological specimens found still hafted to wooden shafts]

Smiley, Francis E. (editor)

1995 **Lithic Assemblage Structure and Variation, Animas–La Plata Archaeological Project, 1992–1993 Investigations in Ridges Basin, Colorado**. Animas–La Plata Archaeological Project Research Paper No. 2, Northern Arizona University, Flagstaff. [comprehensive analyses of flaked stone collections from the Durango area]

Sobolik, Kristin D.

- 1996 Lithic Organic Residue Analysis: An Example from the Southwestern Archaic. **Journal of Field Archaeology** 23(4):461–469.

Stanford, Dennis J., and Bruce A. Bradley

- 2012 **Across Atlantic Ice: The Origin of America's Clovis Culture**. University of California Press, Berkeley. [Chapter 1, “Flaked Stone Technology: A Primer” is an excellent overview useful for any time period]

Stiger, Mark

- 2001 Lithic Sources in the Upper Gunnison Basin. In: **Hunter–Gatherer Archaeology of the Colorado High Country**, by Mark Stiger. Appendix B, pp. 215–221. University Press of Colorado, Boulder.

Sullivan, Alan P., III, and Kenneth C. Rozen

- 1985 Debitage Analysis and Archaeological Interpretation. **American Antiquity** 50(4):755–779. [proposes an alternative approach to debitage classification]

Swanson, Earl (editor)

- 1975 **Lithic Technology, Making and Using Stone Tools**. Mouton Publishers, The Hague. [good early collection of technical articles]

Torrence, Robin

- 1986 **Production and Exchange of Stone Tools**. Cambridge University Press, Cambridge, UK. [one of the better recent texts]

- 1989 editor. **Time, Energy and Stone Tools**. Cambridge University Press, Cambridge, UK.

Turner, Ellen Sue, and Thomas R. Hester

- 2002 **A Field Guide to Stone Artifacts of Texas Indians**. Gulf Publishing, Lanham, MD.

Vaughan, Patrick

- 1985 **Use-Wear Analysis of Flaked Stone Tools**. University of Arizona Press, Tucson, AZ. [thorough treatment based on Southwest data]

Vehik, Susan C. (editor)

- 1984 **Lithic Resource Procurement: Proceedings from the Second Conference on Prehistoric Chert Exploitation**. Southern Illinois

University, Center for Archaeological Investigations, Occasional Paper No. 4. Carbondale, IL. [a variety of useful chapters, such as Seeman's summary of flintknapper tool kits using burial data]

Whittaker, John C.

1994 **Flintknapping: Making and Understanding Stone Tools.** University of Texas Press, Austin, TX. [excellent introduction, good drawings]

Wilmsen, Edwin N.

1968 Functional Analysis of Flaked Stone Artifacts. **American Antiquity** 33(2):156–161. [an early study emphasizing edge angles]

GLOSSARY

Adze: pecked/ground stone tool class, typically grooved for hafting, oriented with the bit axis perpendicular to the long axis of the handle.

Anvil: stationary boulder or slab used as a support rock during the core reduction phase of flintknapping.

Arris: dorsal ridge or crest on a flake [from Old French *arreste*, ridge].

Assemblage: any grouping of artifacts within a single site, commonly all artifacts (including debitage) found in a given layer at a site. The grouping of all artifacts of all materials at a site may be called an *industry* [see below].

Awl: flaked stone tool class exhibiting a long tapering spur with a sharp tip.

Backed: intentional dulling of one margin of a flake, blade or other tool form in a position opposite from the working edge of the tool; can be accomplished by marginal retouching, abrading, snap fracturing or burinating the edge.

Barb: a projection on the lateral margins of an artifact—sometimes near the base—which slants in a direction from the distal toward the proximal end.

Baton: club-like rod of material other than stone used in soft hammer percussion technique of flintknapping; may be antler, horn, bone or wood [from Old French (*baton*) via Late Latin *bastum*, stick].

Biface: flaked stone artifact exhibiting evidence of facial thinning on both dorsal and ventral faces.

Billet: same as *baton*, above [probably a Celtic origin akin to Irish *bile*, sacred tree or large tree].

Bipolar: technique of core reduction, resting a core or raw material on an anvil and striking the core with a percussor; technique can be used to produce flakes or to split the material nodule in half.

Blade: elongated flake with parallel or sub-parallel lateral edges, at least twice as long as it is wide; also, the distal portion of a hafted tool such as a projectile point or knife.

Blank: any piece of lithic material modified to an intended stage of a lithic reduction sequence in a specified assemblage. It must be demonstrable that it is not a finished implement and that it is intended for further modification. Furthermore, it must have the morphological potential to be modified into more than one implement type within the assemblage. The method of its manufacture is not important in its initial identification.

Borer: spurred tool class characterized by a short, blunt, usually unifacial projection used for gouging, routing, narrow chiseling, etc.

Bulb of force: the bulbar part on the ventral face at the proximal end of a flake, usually produced by percussion rather than pressure. Tends to be more prominent on hard hammer flakes. A.k.a. bulb of applied force or bulb of percussion.

Bulbar scar: see *erailure*, below. Also, that portion of a negative flake scar left by the bulb of force on the matching flake.

Burin: chisel-like tool class derived from a flake, blade or other artifact form; made by removing all or part of an edge using percussion oriented along the long axis of the piece. The specialized flake removed as a result of the burin break is called a burin blade or spall [a French term, perhaps from Italian *burino*, cutting/engraving tool].

Burination: a.k.a. burin faceting, the technique of removing an artifact's edge by a percussion blow oriented parallel to the long axis of the edge; in Colorado it is more often used as a backing technique than to produce a true burin tool.

Cache: a storage feature, sometimes in an isolated area away from the camp or habitation; lithic artifacts are sometimes found in ancient caches [from French *acher*, to hide].

Celt: pecked/ground stone tool class, essentially an ungrooved axe [from Late Latin *celtis*, chisel].

Cloudblower: type of pipe, carved stone or ceramic, in an elongated conical shape often used to direct exhaled smoke to a specific spot during ceremonies.

Comal: a class of ground stone tool used as a cooking slab or griddle; commonly called a “piki stone” in the Southwest, from the Hopi’s blue corn piki bread cooked on such slabs [Spanish, from Nahuatl (Aztec language) *comalli*, griddle].

Complex: a distinctive combination of tools and possibly other traits restricted in time and space, key to defining an archaeological culture, e.g., Cody complex. Also, the “tool kit” of a culture.

Contex: the physical surroundings of any in situ archaeological artifact or feature, e.g., a soil horizon or living surface containing all contemporaneous artifacts spatially associated with a hearth.

Compression Rings: same as *conchi*, *rings of force*, *ripple marks*, and *undulations* below.

Conchi: same as *rings of force*, *ripple marks*, and *undulations* below; wave-like marks radiating away from the point of impact in concentric arcs, indicative of both pressure and percussion in flintknapping [from Greek *konkhē*, shell].

Conchoidal fracture: diagnostic fracture on a plane surface which resembles and has the characteristics of half a bivalve shell. A necessary attribute of raw material selected for flaked stone tool manufacture.

Core: any rock from which one or more flakes have been intentionally removed.

Core tool: a core used for some heavy duty purpose(s) after one or more flakes have been removed, e.g. chopper or scraper-plane.

Cortex: natural weathered surface, or rind, on any rock.

Debitage: residual lithic material resulting from tool manufacture [from an old French term meaning cutting of stone].

Déjeté: a type of “offset” scraper, most often seen in Paleoindian assemblages [a French term meaning lopsided or crooked]

Denticulate: flaked stone tools of various functions exhibiting fine to coarse, saw-like serrations along one or more edges [from Latin *denticulus*, small tooth].

Distal: the edge of a flake or tool opposite the striking platform, or where the flake terminates (detaches from the core). The distal end is sharp when the flake detaches correctly.

Dorsal: the “outside” face of a flake or uniface, visible to the flintknapper before the original flake has been removed from the core. The dorsal face of an artifact may exhibit cortex, one or more negative flake scars and ridges (see *arris* above), and ripple marks within the flake scars.

Eccentrics: any tool type, usually in flaked stone, made in an unusual shape such as an animal effigy.

Eolith: “dawn stone,” a lithic piece naturally flaked by physical forces such as soil movement or a rock fall [from Greek *eos*, dawn + *lithos*, stone].

Eraillure: a small flake scar on the surface of the bulb of force, most often produced during percussion flaking of brittle materials such as obsidian. An eraillure is a special type of spalling, initiating at a fissure or radial striation on the bulb; also may be called a *bulbar scar*.

Expedient tool: any tool produced using a minimum of effort, e.g., for an unanticipated immediate need.

Fissure: tiny cracks in the surface of a flake arranged in a pattern converging toward the point of impact; may be seen either on the ventral face or in negative flake scars on the dorsal face of a flake or tool. A.k.a. hackle, lance, radial fissure, radial striation, or radii.

Flake: any piece of stone intentionally removed from a larger piece by the application of force, either percussion or pressure.

Flaker: flintknapping tool with a sharp tip used in pressure flaking, often made of antler or tooth. A.k.a. compressor.

Flintknapping: the production of flaked stone tools by percussion and/or pressure [from Middle English *knappen*, to strike sharply].

Fluted point: a projectile point bearing one or two longitudinal channel flake scars from base toward the tip on one or both faces, e.g., Folsom type.

Graver: flaked stone tool class having a short, delicate spur used for shallow etching, engraving, etc.

Ground stone: stone tool classes exhibiting one or more faces planed smooth through use and/or manufacture, e.g., manos.

Gull wing: a small wing-shaped scar on the ventral face of a flake below the bulb of percussion, initiated at an impurity or inclusion in the lithic material.

Haft element: the proximal portion of a tool, modified to be securely attached to a shaft or handle.

Hertzian cone: a rarely preserved by-product of percussion on rocks with conchoidal fracture, located at the point of impact on the proximal end of a flake; has the shape of a tiny volcano.

Honing surface: ground stone surface, often on a bedrock outcrop, exhibiting lenticular grooves worn into the rock during the shaping of antler, bone, wood and other soft artifact materials.

Implement: any piece of lithic material that has been modified to an intended stage of a lithic reduction sequence in a specified assemblage. It must be demonstrable that it is the final intended stage and is not intended for further modification (other than by use). The method of its manufacture is not important in its initial identification.

Industry: artifact assemblages of a particular material or function that are found so consistently in a region that they are believed to represent the work of a single society, e.g. the Olduvai industry.

Isotropic: material having the same properties in all directions, e.g., conchoidal fracture [from Greek *isos*, equal + *tropos*, a turn].

Jet: archaeological term for soft, black material such as lignite, carved and/or ground to shape usually for ornamental items.

Lance: see *fissure*, above.

Lanceolate: lance or spear-like, as in the typical shape of the blades of Paleoindian projectile points [from Latin *lancea*, lance].

Lateral: the left and right edges or margins of a flake or tool, connecting the proximal and distal ends. The lateral edges are relatively sharp when the flake detaches correctly and hasn't subsequently broken.

Lithic: any stone tool or debris from its manufacture [from Greek *lithos*, stone].

Mano: pecked/ground stone tool class of portable hand-held “mullers,” most often used on a stationary rock slab (metate) to process seeds into flour [Spanish, from Latin *manus*, hand].

Manuport: an unmodified artifact transported into a site by people—such as a fossil or river pebble—and recognized as cultural due to its archaeological, unnatural context [from Latin *manus*, hand + *portare*, to carry].

Maul: pecked/ground stone tool class of hafted (grooved) and hand-held artifacts with durable, blunt working ends used in pounding, crushing and other hammering tasks.

Metate: pecked/ground stone tool class of stationary rock slabs used with manos, most often to process seeds into flour [from Nahuatl *metlatl*, corn-grinding slab].

Modification: the act of morphological alteration of a unit of lithic material by a human agent. A core is a modified piece of stone, whereas a flake struck from the core is a distinct unmodified lithic unit until it is subsequently altered by human activity.

Modified flake: any flake tool (not a uniface or biface) with one or more retouched and/or utilized edges.

Mohs scale: a geological measure rating the hardness of a mineral using a standard of ten minerals, from softest (talc, rated one) to hardest (diamond, rated ten).

Morphology: the structure and three dimensional form of an artifact, exclusive of its function [from Greek *morphē*, form].

Mortar: pecked/ground stone (or wood) tool class with a cup-shaped use surface, used as a set with a pestle for grinding and light-duty pounding.

Neck: portion of a flaked stone tool between the notches, i.e. where the haft element and blade merge.

Outrepassé: over and beyond the opposite margin, or “overshot” flaking; term describing a percussion blow that removes a flake extending across the entire width of the artifact; often seen in Clovis assemblages (early Paleoindian, pre-10,700 BC). Such a flake also may be described as having a “plunging termination” [from French *outrépasser*, to go beyond or exceed].

Pecking: percussion technique for ground stone tool manufacture and maintenance, in which light blows are struck in a direction perpendicular to the surface of the tool.

Pièces esquillées: flaked stone tool class of flake and bifacial tools used as wedges; the term is usually applied in Paleo-Indian assemblages [French, splintered pieces].

Piki stone: same as *comal*, above. Piki is a wafer-thin bread made of fine blue cornmeal that is a prized food of the Hopi.

Platform: the table or surface area receiving the force necessary to detach a flake or blade. Can be either natural or prepared.

Preform: unfinished, unused biface; production stage following a blank with relatively symmetrical outline form, less sinuous edges, shallower flake scars and smaller size such that fewer tool options exist for it.

Primary core: any piece of raw material that has had flakes struck from it, the desired product being the flakes. A handaxe made directly from a piece of raw material is not a primary core if it can be demonstrated that it was the handaxe, not the flakes, which was the intended product.

Primary flake-blank: any flake removed from a primary core for the purpose of further modification.

Prismatic blade: a long, narrow specialized flake with parallel sides. Generally triangulate or trapezoidal in section and bearing two or three prism-like facets on the dorsal face. In large-scale production, associated with polyhedral cores.

Provenance: location of origin, e.g., a specific lithic source area for obsidian or chert [from Latin *pro-*, forth + *venire*, to come].

Provenience: location of discovery, e.g., the excavation grid coordinates and vertical elevation of an obsidian or chert artifact.

Procurement: acquisition; the act of quarrying raw material from a lithic source area.

Proximal: the edge/surface of a flake or tool at the striking platform, or where the flake is impacted or pressed off by the flintknapper. The proximal edge may be somewhat sharp or faceted if the flake was removed from a thinned piece rather than a core, or it may be a flat surface with or without cortex. Most tools are illustrated with the proximal end oriented up.

Raclette: a type of side scraper most often found in Paleoindian assemblages, characterized by manufacture on very thin flakes and low angle, delicate marginal retouch [possibly from the French word for a “squeegee,” the rubber-edged tool used to clean glass using a scraping motion].

Raw material: any unmodified piece of lithic material that is structurally and morphologically suitable for modification into implements.

Retouch: pressure flaking technique used to thin, straighten, sharpen, smooth and make the artifact more regular in form.

Rings of force: curving, wave-like marks from percussion and pressure flaking that are visible on the ventral surface and negative flake scars of smooth-textured lithic artifacts; the convex side of the rings indicates the direction of the percussion blow.

Ripple marks: same as *compression rings*, *conchi*, *rings of force*, and *undulations*.

Scraper: flaked stone tool class including unifaces, bifaces and flake tools all characterized by one or more beveled edges with a working angle usually $> 30^\circ$.

Secondary core: any primary flake-blank that has had flakes struck from it, the desired product being the flakes.

Secondary flake-blank: any flake removed from a secondary core for the purpose of further modification.

Shatter: amorphous debris lacking flake characteristics, commonly produced in hard hammer production especially when reducing low quality raw material.

Spall: a type of damage to an artifact resulting in the loss of a relatively thin piece of the surface; also, the sliver of rock that is broken off. Eruptions and potlid scars are examples of spalling.

Spokeshave: flaked stone tool class of notched tools having one or more notches (small, concave scraping edges) made by unifacial marginal retouch.

Spurred tool: any flaked stone tool class whose working edge is a bit projecting out from the surrounding edge; e.g., borer, drill, graver.

Stage: a knapper's intended previsualized goal in a lithic reduction sequence.

Stem: haft element; also refers to unnotched tool forms with straight or contracting haft element edges.

Step: a change in a knapper's process orientation which may or may not involve a change of technique. When knappers strike flakes from cores, they have a flake production orientation; however, when they begin to modify one of these flakes, the process orientation changes. Each of these changes constitutes a step.

Step fracture: a flake scar that terminates abruptly in a right angle break at the point of truncation.

Striations: miscellaneous type of use wear commonly observed on smoothed/polished surfaces, consisting of shallow grooves or etch marks produced by friction.

Tang: a basal projection or "barb" on a hafted tool; may refer to either to the shoulders or base corners (intersection of basal and stem edges) on the proximal portion of a tool.

Tchamahia: celt-like tool in ancient Puebloan (Anasazi) sites, some of which are believed to have been used as agricultural tools (e.g., hoes) and other, more highly polished versions as ceremonial objects [from Keresan, also spelled *tcamahia*].

Tool class: artifact category of common function such as knife, scraper, mano.

Tool type: artifact category of common style such as corner-tanged knife, Cody knife, Shoshonean knife, etc.

Undulations: same as *compression rings*, *conchi*, *rings of force*, and *ripple marks* above.

Uniface: any flaked stone tool thinned on one face only, e.g., formal scrapers.

Use Wear: any damage along a tool edge or on a tool face produced as a by-product of tool use.

Ventral: the “inside” face of a flake or uniface, invisible to the flintknapper until the original flake has been removed from the core. The ventral face may exhibit a bulb of force/percussion, an *erailure*, fissures, and/or ripple marks (see *conchi* and *ring of force* above).

Many of these and other terms can be found in Crabtree (1972) and Bruce A. Bradley’s “*Lithic Reduction Sequences: A Glossary and Discussion*” (pp. 5–14 in Swanson [1975]), both cited above. Also see www.archaeologywordsmith.com, an excellent web site on terms in archaeology.