4.1

LOS GEOGLIFOS: IMÁGENES Y ESCENARIOS EN EL DESIERTO DE NAZCA Y PALPA

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Los geoglifos que se encuentran en la cuenca de Nazca constituyen uno de los legados culturales más notables de América prehispánica. Sobre una superficie de más de 500 km² los antiguos pobladores de Nazca lograron transformar un terreno pedregoso en el desierto, que se extiende entre los oasis de los valles al pie de los Andes, convirtiendo a las pampas, colinas y estribaciones aledañas en un espacio lleno de figuras de grandes dimensiones. Estas marcas en la tierra se conocen hoy como geoglifos, que significa "grabados en la tierra". Salvo los casos en que los geoglifos han sido destruidos por el ser humano, las condiciones climáticas favorables han permitido que se conserven hasta nuestros días.

Nadie sabe a ciencia cierta cuántos geoglifos existen en la cuenca de Nazca, pero su número debe ascender a los miles. Del total, solo un pequeño grupo ha obtenido especial atención, ya que se trata de un conjunto de figuras zoomorfas fácilmente identificables, entre las que destacan el colibrí, el pelícano, el mono, el perro, la araña, la lagartija, la ballena, o de seres con rasgos humanos. Estos geoglifos figurativos constituyen hoy en día los más solicitados en los sobrevuelos turísticos que se realizan sobre las pampas. Sin embargo, los geoglifos geométricos son mucho más numerosos en la cuenca de Nasca, y ellos pueden subdividirse según sus formas en líneas (recta, zig-zag, meandros, espiral) o superficies (rectángulos, trapecios, triángulos).[1] Mientras las figuras con rasgos humanos por lo general miden pocos metros, los geoglifos geométricos pueden alcanzar dimensiones impresionantes. El trapecio más grande que se conoce tiene una longitud de casi 1.9 km (fig. 51), y algunas de las líneas rectas son notoriamente más largas. Muchas líneas confluyen en puntos elevados del terreno, donde conforman centros de líneas (fig. 52). Debido al gran número de geoglifos, en muchos casos hay cruces e intersecciones. A lo largo de los valles de ríos (entre otros del río Ingenio y del río Viscas), se verifica una alta densidad de geoglifos mientras que su concentración decrece a medida que uno se aleja del río.

Para el observador contemporáneo, al principio los geoglifos pueden resultar misteriosos, ya que en el mundo existen pocos fenómenos comparables. Surgen preguntas: ¿cómo se pudo transformar el desierto en tal magnitud?, ¿quién creó los geoglifos, y cuándo?, y sobre todo: ¿por qué, o con qué objetos fueron trazados? Para resolver todas estas preguntas, la investigación ha arrojado paulatinamente respuestas más o menos claras. Esto convierte a los geoglifos en cierta medida menos misteriosos, pero no por eso menos interesantes. La base del conocimiento del que disponemos hoy en día sobre los geoglifos es la investigación arqueológica, que se inició a mediados de la década de 1920.[2]

Existen menciones ocasionales a los geoglifos desde el siglo XVI por parte de viajeros y cronistas.[3] Toribio Mejía Xesspe, Julio C. Tello y Alfred Kroeber fueron los primeros arqueólogos que los describieron en 1926.[4] Para ese entonces, no obstante, los geoglifos no eran el objetivo central de las investigaciones arqueológicas, sino que solamente eran documentados

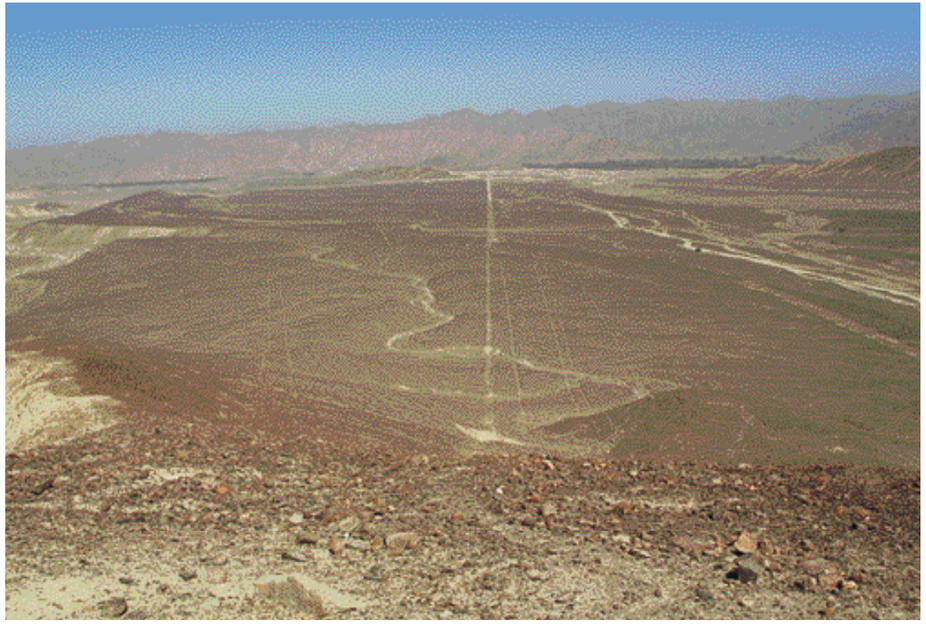

Fig. 51
Trapecio más grande conocido en la cuenca de Nazca, valle de Viscas compuesto por cuatro trapecios enlazados, constituyendo el centro de una de las concentraciones de geoglifos más densas en la cuenca de Nazca.

Fig. 52
Línea recta al sur de Llipata. Al fondo el Río Grande, y detrás de él la cadena montañosa cuya forma dentada permitía la localización exacta de la puesta del sol. El punto de inicio de la línea es a la vez un centro del que parten numerosas líneas pendiente abajo.

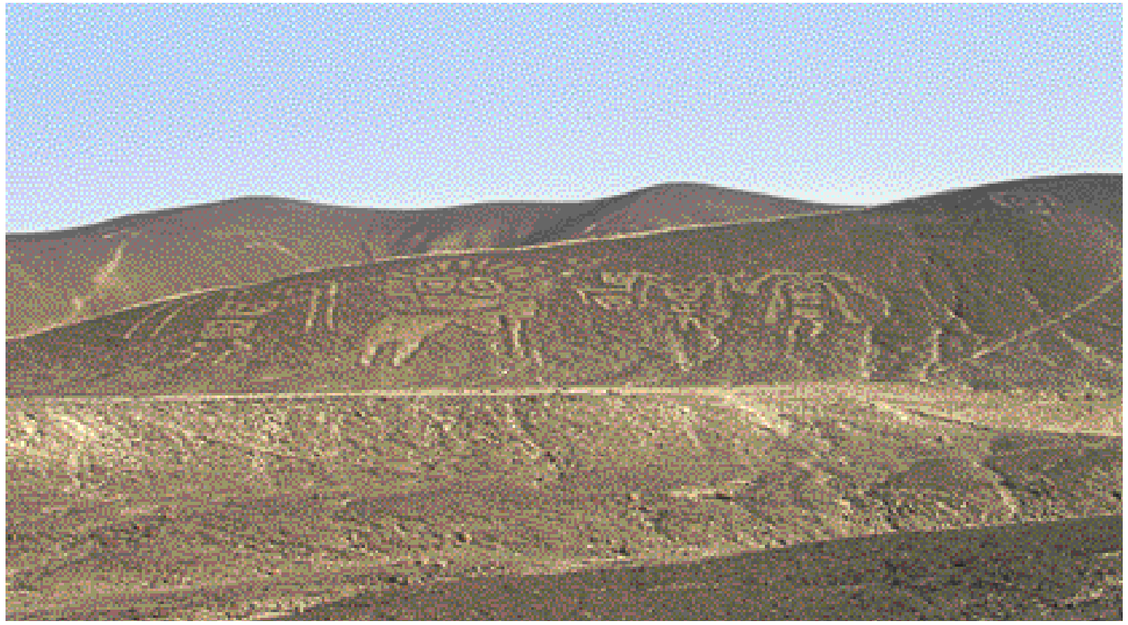

Fig. 53
Geoglifos figurativos tempranos en una pendiente al sur de Llipata. Restaurados en el 2006. La figura más grande es la del denominado Ser Oculado de la época Paracas.

Fig. 54
Sobre la Cresta de Sacramento al norte de Palpa se cruzan los bordes de piedras apiladas de dos trapecios grandes. El trapecio de la izquierda fue trazado en un momento posterior al de la derecha.

Fig. 55
Vasijas de cerámica nasca fragmentadas en la pampa de Nazca.

superficialmente durante la excavación de cementerios. Recién en la década de 1930 es que los geoglifos se comienzan a reconocer en toda su dimensión. Esto se debe principalmente, a partir de la consolidación del tráfico aéreo comercial a lo largo de la costa peruana, y que se pudo observar desde el aire la magnitud en la que estaba marcado el desierto a través de estos restos. Al inicio de los años cuarenta, el historiador Paul Kosok dio un impulso decisivo a la investigación de los geoglifos, al ser el primero en interpretarlos como marcas astronómicas o como un calendario. El 22 de junio de 1941, día del solsticio de invierno en el hemisferio sur, Kosok descubre la primera figura zoomorfa, y sobre todo logra observar que la puesta de sol coincidía con el fin de una línea de kilómetros de largo al sur de Palpa (fig. 52).[5] Algunos años más tarde el arqueólogo Hans Horkheimer cartografía esta línea, otras cercanas y un grupo de otros geoglifos por primera vez, interpretándolos como un contexto asociado al culto a los ancestros.[6]

Mientras la hipótesis de Horkheimer tuvo poca aceptación, la interpretación astronómica de los geoglifos emitida por Kosok fue ampliamente difundida, sobre todo gracias a la matemática alemana Maria Reiche. Reiche realizó investigaciones adicionales, primero por encargo de Kosok y luego de manera independiente a lo largo de varias décadas, que inicialmente tuvieron lugar en toda la cuenca de Nazca, pero luego se concentraron en las pampas de Nazca. Reiche fue la primera en cartografiar muchos de los geoglifos; analizó su orientación y técnica de construcción, descubrió numerosas figuras y realizó importantes esfuerzos para la protección de los geoglifos.[7] En 1967, el astrónomo Gerald Hawkins pone a prueba la interpretación astronómica de los geoligfos sobre la base de propios datos cartográficos y mediciones realizadas en el valle de Ingenio. Hawkins detectó que solo pocos geoglifos podrían responder a criterios astronómicos.[8] Los arqueoastrónomos Anthony Aveni y Clive Ruggles llegaron a un resultado similar hacia finales de la década de 1980, realizando otras investigaciones adicionales que tuvieron lugar en el marco de un gran proyecto de investigación dirigido por Aveni.[9] El foco de estudio aquí eran los centros de las líneas localizados en las pampas de Nazca, y en base a ellos pudo identificar un orden espacial en el aparente caos de los geoglifos. En correspondencia con tradiciones culturales andinas, las líneas fueron interpretadas como senderos de procesión y como expresión de una organización social.

En el marco del proyecto dirigido por Aveni, por primera vez los geoglifos son estudiados en asociación a otros hallazgos arqueológicos –como fragmentos de cerámica o construcciones de piedra– cuando antes se habían estudiado como elementos aislados.[10]

Durante la década de 1980 otros geoglifos fueron analizados por el arquitecto italiano Giuseppe Orefici en el marco del Proyecto Cahuachi, que tuvo como principal objetivo estudiar el gran centro de la cultura Nasca: Cahuachi, interpretado como el principal centro religioso durante la época Nasca Temprano (50-300 d.C.).[11] La intención de Aveni y de Orefici, de volver a apreciar los geoglifos con mayor énfasis en su contexto histórico-cultural, también se llevó a cabo en los años ochenta por el antropólogo Johan Reinhard, quien postuló una posible conexión entre los geoglifos, el agua y el culto a las montañas.[12] Unos años más tarde, los arqueólogos Helaine Silverman, David Browne y José Baraybar retomaron el estudio de los geoglifos de los distintos valles de la cuenca de Nazca más allá de las Pampas de Nazca, que habían quedado en el olvido. Estos investigadores pudieron mostrar la cercana relación entre geoglifos y asentamientos.[13] Silverman interpretó las líneas que conducen a Cahuachi como caminos de peregrinación.[14]

En el marco del proyecto iniciado a mediados de la década de 1990 por los arqueólogos Markus Reindel y Johny Isla en Palpa, ubicado en el sector norte de la cuenca de Nazca, los geoglifos fueron registrados por primera vez con criterios arqueológicos, lo que permitió obtener una serie de nuevos conocimientos acerca de su función, cronología y ordenamiento espacial.[15] Al mismo tiempo, los geodésicos Bernd Teichert y Christiane Richter llevaron a cabo un proyecto de investigación en las pampas de Nazca, que tuvo como objetivo cartografiar los geoglifos y poner a prueba nuevamente la hipótesis astronómica.[16] Desde 2010 se llevan a cabo otros trabajos arqueológicos, cuyos resultados solo se conocen parcialmente.[17]

Las investigaciones mencionadas constituyen una buena base para dar respuesta a las preguntas sobre el cómo, quién, cuándo y el por qué de los geoglifos. Para ello, a continuación se hará referencia especialmente a los resultados obtenidos en Palpa.

¿Cómo?
Técnica de construcción y configuración

La pregunta de cómo se hicieron los geoglifos es fácil de responder, en vista de que basta con observarlos detenidamente en el campo. Los geoglifos se definen a través de un contraste de colores entre la superficie original de tonalidad oscura del desierto y aquella modificada por el ser humano, que es de tonalidad clara. Este contraste de colores es especialmente fácil de producir debido a la geomorfología propia de la cuenca de Nazca. Frente a los valles vecinos en el norte y sur, esta región presenta la particularidad de contar con una cadena montañosa adicional que se ubica entre el pie de la cordillera de los Andes y el océano Pacífico. Esta cordillera costera ejerce la función de una barrera, al producir un estancamiento del material de erosión que es transportado por los ríos pendientes abajo en el flanco occidental de los Andes. De esta manera, la cuenca de Nazca se fue llenando a lo largo de extensos lapsos de tiempo –hasta hace aproximadamente 45.000 años– con cantos rodados gruesos y sedimentos finos, cuya superficie formó las pampas de hoy en día.[18] En estos inmensos depósitos luego se introdujeron los ríos que, en lugar de

llegar por separado al mar, confluyen delante de la cordillera costera y solo la atraviesan en un punto como el Río Grande. En la superficie de las capas de aluvión, el viento fue despejando paulatinamente la arena fina y lo que quedó fue una densa capa de piedras pequeñas que se conoce como el pavimento del desierto y que con el paso del tiempo adquirió una pátina oscura debido a procesos de oxidación.[19] Entonces, para producir un geoglifo, bastaba con retirar el así llamado pavimento del desierto, quitando manualmente las piedras y dejando a la vista el sedimento claro y arenoso que se encuentra debajo. La acumulación de las piedras retiradas a lo largo de los bordes de las áreas despejadas reforzó el contraste de color entre el suelo oscuro del desierto y la arena clara.

Si bien esta técnica de construcción básica se aplicó generalmente, en algunos casos hay ciertas variaciones. Por ejemplo en el caso de las figuras antropomorfas, las piedras recogidas no solo fueron acumuladas en los bordes de las superficies despejadas, sino también en el interior, para dar forma a ojos, bocas y otros detalles anatómicos (fig. 53). En los trapecios grandes se observa con frecuencia que en la base ancha del trapecio se acumularon piedras más grandes por separado, y en algunos casos éstas fueron utilizadas para la construcción de plataformas (ver líneas abajo). Por último, en los terrenos inclinados –en los que la erosión contínua no permitió la formación del pavimento del desierto–, las líneas rectas fueron surcadas para que de esta manera fueran más visibles. Es por ello que éstas son más profundas que las líneas que se hallan en terrenos planos.

Confirmado que la técnica de construcción de los geoglifos fue relativamente sencilla, ahora debemos plantearnos la pregunta de cómo se dio forma a los geoglifos. Los geoglifos más pequeños, como por ejemplo las figuras antropomorfas o las líneas en las laderas, son perfectamente visibles desde el terreno, de tal manera que su trazado y configuración podían ser controlados visualmente sin problema. En cambio los geoglifos más grandes, como los trapecios o líneas, que por su dimensión no podían ser abarcables con la vista, requerían de mediciones o señalizaciones que, aunque no parezca, eran técnicamente fáciles de efectuar. Por medio de miras o piedras erigidas verticalmente, es posible trazar líneas rectas con precisión a grandes distancias, como se ha podido comprobar mediante piedras clavadas en el suelo a lo largo de trapecios inconclusos. La pregunta más difícil es la manera en que se produjeron las grandes y complejas figuras zoomorfas, que no pueden observarse completamente desde el suelo ya que éstas están compuestas en su mayoría por una única línea continua, que reproduce la figura animal con cierto grado de abstracción. Es posible que las formas hayan sido dibujadas inicialmente en una escala menor, y luego extendidas en el terreno con la ayuda de cuerdas,[20] aunque no existen evidencias que comprueben este procedimiento.

De esta manera, el trazado de los geoglifos no habría resultado tan complejo en términos técnicos. El desafío consistía más bien en la organización y ejecución de los trabajos. Probablemente había especialistas responsables de la selección del lugar así como de la determinación del tamaño y forma de un geoglifo. El repertorio uniforme de los geoglifos en toda la cuenca de Nazca apunta a que estos especialistas estaban en contacto entre ellos aún en épocas de fragmentación política, y obedecían a determinados estándares. La elaboración misma de los geoglifos, en cambio, pudo más bien haber estado a cargo de la población común, en paralelo a la realización de otras actividades como la agricultura o diversos oficios. Los numerosos geoglifos inconclusos demuestran que, efectivamente, el proceso de trabajo frecuentemente estuvo interrumpido y probablemente fue ejecutado en pequeños pasos durante periodos prolongados, lo cual apoya esta tesis.

¿Quién y cuándo? Contexto social e histórico-cultural

La hipótesis de que los geoglifos fueron trazados por la población autóctona, va de la mano con el hecho de que los numerosos fragmentos de cerámica que se encuentran sobre la superficie de los geoglifos son exactamente iguales a los de la cerámica asociada a los asentamientos y cementerios de la cuenca de Nazca. Parte de esta cerámica, especialmente los recipientes para almacenar, probablemente sirvieron para proveer a los trabajadores de agua y alimentos. La cerámica fina, por otra parte, debió haber servido para otros fines, que se discutirán más adelante.

La cerámica fina polícroma hallada sobre los geoglifos constituye el principal vehículo para su datación. Pese a ello, hay que mencionar que no es posible establecer con certeza cuándo y cómo un fragmento de cerámica llegó a un geoglifo, pues esto pudo haber ocurrido cientos de años después del trazado del mismo. Sin embargo, las actividades humanas en el inhóspito desierto se limitan al mínimo, de tal manera que no hay muchas opciones de cómo y cuándo la cerámica pudo haber ido a parar allí (una excepción importante se discutirá más adelante). Es así que resulta plausible la suposición de que la presencia de cerámica sobre los geoglifos esté relacionada con su trazado y utilización. Para delimitar este lapso de tiempo en función de una datación, debemos tomar en cuenta el fragmento cerámico más antiguo hallado en un geoglifo.

Otro aspecto que se debe considerar es que en muchos lugares se cruzan varios geoglifos (fig. 54). En la medida en que se hace posible reconocer qué geoglifo corta al otro, que no siempre es posible, esta estratigrafía proporciona información adicionalmente útil para establecer la secuencia temporal. La aplicación de métodos provenientes de las ciencias naturales como la datación de la pátina acumulada sobre las piedras que fueron retiradas,[21] o de la luminiscencia de las piedras que fueron tapadas en el mismo proceso,[22] no han permitido hasta ahora datar a los geoglifos con la precisión necesaria. En el caso de los geoglifos figurativos, las comparaciones estilísticas e iconográficas también pueden ser útiles para la datación, ya que algunos motivos aparecen en soportes como la cerámica o los textiles, que pueden clasificarse temporalmente con certeza. Estas comparaciones señalan que los primeros geoglifos fueron trazados durante el Horizonte Temprano (cultura Paracas, aprox. 840-260 a.C.).[23] Se trata de figuras humanas, como aquellas que fueron representadas en mayor detalle en textiles funerarios (fig. 53). De especial interés resulta, sin embargo, otro paralelo ya que tales figuras también fueron efectuadas como imágenes del arte rupestre, frecuentemente realizadas sobre grandes piedras y rocas ubicadas en las laderas.[24] Es aquí donde probablemente se encuentre el origen de la tradición de los geoglifos, pues muchas de las figuras antropomorfas se parecen a las imágenes rupestres no solo en estilo y diseño, sino también en lo que se refiere a su ubicación en el terreno. Parece entonces posible que algunos diseños conocidos –que fueron representados sobre diferentes medios– fueran transferidos desde las rocas al suelo desértico circundante en algún momento durante el Horizonte Temprano. El hecho de que muchas de estas figuras estén cortadas por líneas más tardías confirma esta clasificación temprana.

Hallazgos de cerámica sobre dichas figuras antropomorfas tempranas, en cambio, son extraordinariamente raros. Esto apunta a que sobre o junto a ellas no tuvieron lugar actividades regulares. Más bien es probable que, nuevamente al igual que en el caso de las imágenes rupestres, se tratara de representaciones que estaban destinadas a ser observadas desde cierta distancia. Esto era posible gracias a su posición inclinada en la ladera. Cuando había actividades relacionadas con estas figuras tempranas, éstas debieron desarrollarse en posiciones alejadas desde donde pudieran visualizarse bien. Pese a que no hay certeza acerca de la naturaleza de tales actividades, en Palpa se encontraron en diferentes lugares del terreno ofrendas de cerámica de la época Paracas Tardío, las que atestiguan que en esta fase temprana el trazado de geoglifos no era la única actividad realizada en el desierto. Tales ofrendas de cerámica podrían haberse realizado mientras se contemplaban las figuras antropomorfas.

Una relación entre los geoglifos y la cerámica se vuelve evidente desde el inicio de la época Nasca, alrededor del 260 a.C. A partir de este momento, todos los periodos culturales prehispánicos que le suceden en esta área están representados por hallazgos de cerámica sobre los geoglifos, aunque en número variable. Principalmente se encuentran fragmentos cerámicos aislados, de los cuales resulta difícil explicar en cada caso cómo llegaron hasta allí. Pero también existe un considerable número de vasijas de cerámica fina fragmentada pero casi completa, las cuales probablemente fueron rotas intencionalmente en el lugar (fig. 55). Estas se encuentran sobre todo a lo largo de las líneas y en los bordes de los trapecios. Es probable que su presencia se relacione con el recorrido regular sobre los geoglifos, pues a juzgar por lo compacto de su superficie se puede asumir que hubo un recurrente tránsito a pie (ver líneas abajo). Al iniciarse el periodo Intermedio Temprano (cultura Nasca, aprox. 200 a.C.-650 d.C.) se puede establecer un notable incremento en el número de hallazgos. El apogeo del trazado y uso de los geoglifos data claramente de la época Nasca Temprana (aprox. 50-300 d.C.). Luego, el número de hallazgos asociados decrece en forma lenta pero contínua, hasta el inicio del Horizonte Medio (aprox. 650 d.C.). En los alrededores de Palpa, parece que algunas vasijas cerámicas del siglo VIII marcan el último momento de uso de los geoglifos.

Sin embargo, hay ciertas diferencias regionales que vale la pena mencionar. Mientras el norte de la cuenca de Nazca fue abandonado temporalmente durante el Horizonte Medio,[25] en el área del valle de Nazca, donde hay evidencias de asentamientos de la época Wari, se ha encontrado un número considerable de fragmentos de cerámica de esta fase sobre los geoglifos.[26] Esto podría significar que en el sur de la cuenca de Nazca los geoglifos estuvieron en uso por más tiempo que en el norte. Pero también podría haber otra interpretación, que los hallazgos cerámicos en esta región podrían estar relacionados con el tránsito por las pampas de Nazca. Si se quiere viajar desde la parte sur de la cuenca de Nazca hacia el norte, el camino más fácil no se encuentra a lo largo de los ríos, como en otras partes de la cuenca, sino a través de las pampas de Nazca, donde pasa también la carretera Panamericana Sur. Las líneas existentes constituirían en este caso la forma más fácil de transitar. Entonces, sobre las pampas de Nasca siempre parece haber habido circulación humana, la cual debió dejar sus huellas en forma de restos de cerámica. La situación es similar durante el periodo Intermedio Tardío (cultura Ica, aprox. 1180-1400 d.C.). En esta época se encuentran numerosos fragmentos de cerámica sobre los geoglifos, tanto en el norte como en el sur de la cuenca de Nazca. Mientras que en el sur, estos hallazgos se interpretan como señales de que los geoglifos seguían en uso en esa época,[27] para la región de Palpa está claro que no hay relación, sino que aquí, en cambio, los fragmentos de cerámica deben entenderse en el contexto de los asentamientos del periodo Intermedio Tardío establecidos lejos de los valles para efectos defensivos, y por tanto se instalaron en las pampas.[28] Numerosos senderos comunicaban a estos asentamientos entre sí, y con los valles. Tanto los asentamientos como los senderos estaban normalmente ubicados en medio y encima de los geoglifos, lo que demuestra que su importancia habría decrecido en esa época. De esta manera, la tradición de los geoglifos habría terminado mucho antes de la época colonial.

Figs. 56-57
Vistas de geoglifos de la época
Paracas en el valle de Palpa.

Figs. 58-59
Vistas de geoglifos Nasca en el
valle de Palpa.

¿Por **qué?**
Función y significado

La pregunta sobre la razón de ser de los geoglifos es difícil de responder, ya que no contamos con ningún tipo de testimonio oral ni escrito que se haya preservado. Por otro lado los monumentos similares que podrían ayudar en la interpretación son muy escasos. Si bien existen muchos geoglifos en regiones desérticas a lo largo de la costa occidental del continente americano entre California y Chile, en ningún lugar son tan numerosos ni tan particulares como en la cuenca de Nazca.[29] Además hay que considerar que los geoglifos fueron trazados durante más de 1000 años. En vista de que los geoglifos fueron utilizados durante tantos siglos, es posible que el objetivo de los geoglifos haya cambiado a lo largo del tiempo, es decir, que los geoglifos pudieron cumplir diferentes funciones en diferentes momentos. A pesar de estas dificultades, la investigación arqueológica provee importantes indicios para una interpretación, de los cuales algunos ya han sido mencionados.

Como se ha demostrado, el origen de la tradición de los geoglifos se encuentra en el Horizonte Temprano (aprox. 800-200 a.C.), cuando se transfieren por primera vez los motivos desde otros soportes al terreno. Estos diseños representan animales, humanos y seres sobrenaturales, es decir, elementos importantes del entorno vital y mitológico de la población.[30] Tenemos por ejemplo al Ser Oculado, el cual se considera el antecesor del Ser Mítico Antropomorfo de la época Nasca (fig. 53).[31] Ambos fueron probablemente los personajes mitológicos más importantes de su época. Las imágenes representadas en estas figuras debieron estar relacionadas con actividades ceremoniales realizadas en su entorno, como la ofrenda de cerámica. Aún desconocemos el mundo de las creencias detrás de estas acciones, sin embargo ya se manifiestan aquí dos aspectos que pudieron perdurar hasta el final del fenómeno de los geoglifos: 1) la modificación del desierto en función de conceptos y necesidades culturales, y su consecuente inclusión en el paisaje cultural que por lo demás se centraba en los valles, y 2) la realización, en forma regular, de actividades colectivas en el desierto. De esta manera, los geoglifos tuvieron desde el principio una importante función cultural y social.

Una vez reconocidas las posibilidades de estructuración del suelo del desierto para el trazo de geoglifos, se desarrolló un fenómeno independiente al de los otros soportes materiales. Primero se comenzaron a trazar líneas rectas, primero en las estribaciones, y luego en las pampas. Sobre las superficies planas, éstas representaban la opción más simple de movimiento. Ahí había también espacio para más geoglifos de mayor tamaño (figs. 51 a 55 y fig. 60). Hacia la época Nasca Temprano (aprox. 50-300 d.C.) se desarrolló un variado corpus de geoglifos, que en lo sucesivo fueron trazados sobre las pampas, arriba de los valles, aunque las estribaciones seguían siendo incluidas. Debido al paulatino incremento en número y tamaño de los geoglifos, el aspecto social del trabajo colectivo para su trazado fue cobrando mayor importancia. Como ya se mencionó, es posible suponer que una buena parte de la población participaba temporalmente en esta actividad. Así, tanto el uso como el trazado de los geoglifos jugó un rol importante para la cohesión social. Sin embargo, hacia el final de la época Nasca decreció el número y la diversidad formal de los nuevos geoglifos.

Con el paso del tiempo fue aumentando el tamaño de los geoglifos que se trazaban sobre las pampas, por lo que fueron dejando de ser abarcables con la vista. Así, ya no podían servir como imágenes que pudieran observarse desde la distancia. Las actividades que se realizaban originalmente en los espacios alrededor de los geoglifos, pasaron a tener lugar sobre ellos. Evidencia de este hecho es la gran cantidad de cerámica hallada sobre los geoglifos. Otro elemento importante a considerar es la compactación del sedimento de tonalidad clara en las líneas pisadas recurrentemente así como en las superficies interiores de los trapecios, elemento que pudo ser observado en el terreno y también comprobado mediante mediciones magnéticas.[32] Esto significa que hubo un tránsito regular de personas –solas o en grupo– que circulaban a lo largo de los geoglifos geométricos y al hacerlo ofrendaban vasijas de cerámica. De esta manera, se puede asumir que sobre los geoglifos tenían lugar procesiones, que probablemente se regían por determinados patrones. Indicio de esto son las combinaciones de diferentes tipos de geoglifos que aparecen recurrentemente, que debieron fijar las rutas establecidas.

Las ofrendas también se colocaron sobre unas plataformas de piedra bajas que se encuentran sobre todo en los grandes trapecios (ver líneas abajo). La combinación típica consta de dos pequeñas plataformas ubicadas en el lado angosto, y una plataforma grande ubicada en la base ancha del trapecio (fig. 60). Pero también existen plataformas individuales o trapecios sin plataformas. Al inicio de la investigación de los geoglifos se supuso que estas plataformas debían contener entierros.[33] Luego de que en las primeras excavaciones no se produjeran hallazgos de este tipo, las plataformas dejaron de ser de interés para la investigación. Pero las recientes excavaciones cerca de Palpa sacaron a la luz evidencia de que sobre ellas se colocaron ofrendas: vasijas de cerámica fina polícroma, mazorcas de maíz envueltas en textiles, colgantes elaborados de conchas *Spondylus* y cangrejos de río (fig. 61). Estos hallazgos no solo muestran que las plataformas probablemente sirvieron como puntos de referencia para muchas actividades realizadas sobre los geoglifos, sino que también ofrecen una mirada al mundo de las creencias asociadas a estas actividades, pues estos hallazgos están relacionados en el sentido más amplio con el agua y la fertilidad. Esto aplica no solo para el maíz, que provenía de campos irrigados, o los cangrejos de río que solo aparecían estacionalmente, cuando los ríos tenían caudal, sino que la relación más clara se da en el caso de las conchas de *Spondylus,* que normalmente solo existen en las aguas cálidas de la costa del actual Ecuador. Sin embargo, en los años

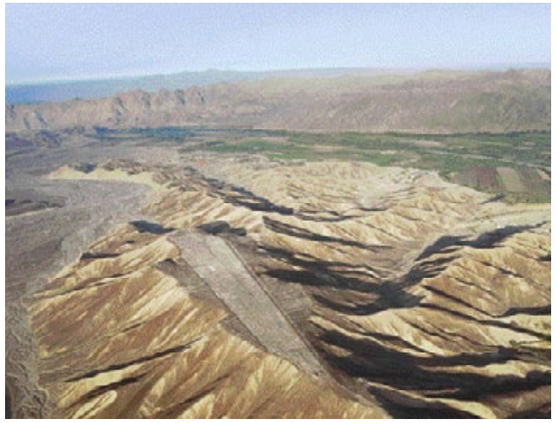

Fig. 60
Trapecio con plataformas de piedra y adobes, localizado arriba de San Antonio, Llipata. El trapecio está flanqueado por líneas paralelas y una figura en forma de espiral, las que se superponen a una línea en zig-zag más antigua. Esta combinación de geoglifos es típica en la región de Palpa, donde aparece en distintos sitios.

del fenómeno climático El Niño, en que las corrientes marinas del Pacífico se desplazan, esta concha también aparece más al sur, en la costa peruana. Cuando esto sucede se presentan precipitaciones en regiones en las que normalmente no llueve. Debido a esta conexión, la concha de *Spondylus* se convirtió en un símbolo de agua y fertilidad en toda el área andina.[34]

El contexto de las actividades que se realizaron sobre los geoglifos geométricos entonces pudo haber estado también asociado al culto del agua y la fertilidad. Esto parece posible por el clima árido de la región y la gran dependencia en los ríos con caudal estacional. Un detalle adicional sustenta esta suposición. El clima de la región se fue volviendo paulatinamente más seco en la época Nasca, de tal manera que la preocupación por el agua debió haberse tornado cada vez más importante.[35] El hecho de que algunas de las plataformas sobre los trapecios de la fase Nasca Temprano (aprox. 50-300 d.C.) fueron construidas no antes de la fase Nasca Medio (aprox. 300-450 d.C.) sería entonces consistente con esta interpretación. Es así que el tema del agua y la fertilidad pudo haber constituido el contexto para las actividades sobre los geoglifos, al menos en las fases tardías de la época Nasca.

En algunas plataformas se han encontrado restos de postes de madera, en algunos casos pequeños postes alrededor de las plataformas que pudieron sostener un techo liviano, y en otros casos postes aislados grandes y rectos de madera de sauce empotrados profundamente en el suelo, los cuales probablemente alcanzaban una altura considerable. Estos postes añadían un llamativo elemento vertical a la configuración horizontal del geoglifo; una dimensión que está totalmente ausente en la percepción contemporánea. Desconocemos para qué servían estos postes, y si estos por ejemplo sostenían estandartes o incluso cabezas-trofeo, como se puede apreciar en una conocida vasija de cerámica (Cat. 8).[36] En todo caso, ellos pudieron servir para la orientación visual en el desierto, entre los numerosos geoglifos. Como han mostrado análisis de visibilidad realizados al norte de Palpa, el punto de ubicación de uno de estos postes era visible desde todos los complejos de geoglifos importantes en el entorno, así como desde un área amplia del valle (fig. 62).

Ese, al igual que otros análisis de visibilidad, han producido importantes conocimientos nuevos sobre el ordenamiento espacial de los geoglifos. Como ha demostrado una comparación sistemática de la visibilidad general de diversos puntos sobre los geoglifos, por un lado, y de puntos seleccionados aleatoriamente en el terreno por el otro, es claro que los geoglifos son mucho más visibles. Por tanto se evidencia que los sitios en los que fueron trazados fueron seleccionados conscientemente en función de la visibilidad. Esto significa que las numerosas actividades que tuvieron lugar sobre los geoglifos no solo eran relevantes para quienes participaban en ellas, sino que aparentemente también debían ser vistas por otros. Este probablemente fue uno de los motivos, además de la mayor accesibilidad, para la acumulación de los geoglifos a lo largo de los valles. Cualquiera que va a pie por

Fig. 61
Conchas *Spondylus* (trabajadas y sin trabajar) procedentes de la excavación de dos plataformas de piedra sobre un trapecio en la Cresta de Sacramento, al norte de Palpa.

el desierto sabe que en estos parajes, la gente en movimiento puede ser vista a una gran distancia, por ejemplo a través del valle de Palpa. Así, por ejemplo cuando un grupo de personas se reunía sobre un trapecio para realizar una procesión y ofrendar vasijas a lo largo de los geoglifos o sobre una plataforma de piedra, esto podía ser apreciado desde muy lejos. Por tanto, esta actividad pudo haber tenido también por objeto definir o manifestar el rol de un determinado grupo dentro de la sociedad. Aún cuando no conocemos los detalles de la organización social durante la época Nasca, los geoglifos debieron haber tenido un papel dentro de ella.

La relación entre los geoglifos y el agua calza bien con hipótesis planteadas anteriormente sobre una orientación de los geoglifos hacia las cimas de las montañas, ya que el agua viene de las montañas. Esta hipótesis también ha podido ser examinada con la ayuda de análisis de visibilidad. El resultado de estos análisis apunta a que la gran mayoría de geoglifos que se encuentran alrededor de Palpa no están orientados hacia las montañas, siendo su número tan bajo que podría deberse a una casualidad. El supuesto culto al agua no conducía entonces a la alineación de los geoglifos con las montañas, sino que más bien aparentemente eran las actividades realizadas sobre los geoglifos las que debían ser vistas.

Los geoglifos, que originalmente fueron concebidos como imágenes, se convirtieron desde el inicio de la época Nasca en escenarios. Sus diseños dejaron de representarse sobre la cerámica o los textiles, y estos soportes comenzaron a servir de base para la representación de las actividades llevadas a cabo en ellos. Esto significa que todas las interpretaciones actuales que consideran a los geoglifos como marcas sin gente en el desierto están equivocadas, pues ellas suprimen dimensiones importantes como la dimensión vertical que constituían las plataformas de piedra, los postes de madera, y sobre todo la gente, así como también la dinámica, que consistía en que la gente concurría una y otra vez al desierto para llevar a cabo actividades sobre los geoglifos. Cuando el clima se tornó más seco durante la transición del periodo Intermedio Temprano hacia el Horizonte Medio y la población de la parte norte de la cuenca de Nasca fue emigrando paulatinamente, los geoglifos y las actividades asociadas a ellos perdieron su significado social, llegando finalmente a su fin luego de más de un milenio.

Conclusión

La investigación arqueológica de los geoglifos ha producido importantes conocimientos en los últimos años. Es por ello que hoy nos resultan mucho menos misteriosos, pero no por eso menos notables. Los habitantes de Nazca fueron capaces de transformar uno de los desiertos más secos del mundo, a lo largo de varios siglos, para servir a los habitantes de esa región como expresión de sus ideas culturales y como escenario de sus actividades sociales. Al principio se representaron allí importantes elementos de su cosmovisión, y más adelante se llevaron a cabo ceremonias que giraban en torno al agua y la fertilidad. Las marcas físicas en el terreno son visibles hasta hoy y cuentan, con total justicia, como patrimonio cultural del Perú y de toda la humanidad, reconocido tanto por el Estado Peruano como por la UNESCO, y merecen ser protegidas por todos. Sin embargo, la clave para la comprensión de los geoglifos la tuvieron las personas que los concibieron, trazaron y utilizaron. Sin ellos, los geoglifos se mantendrán solo como huellas misteriosas en el desierto.

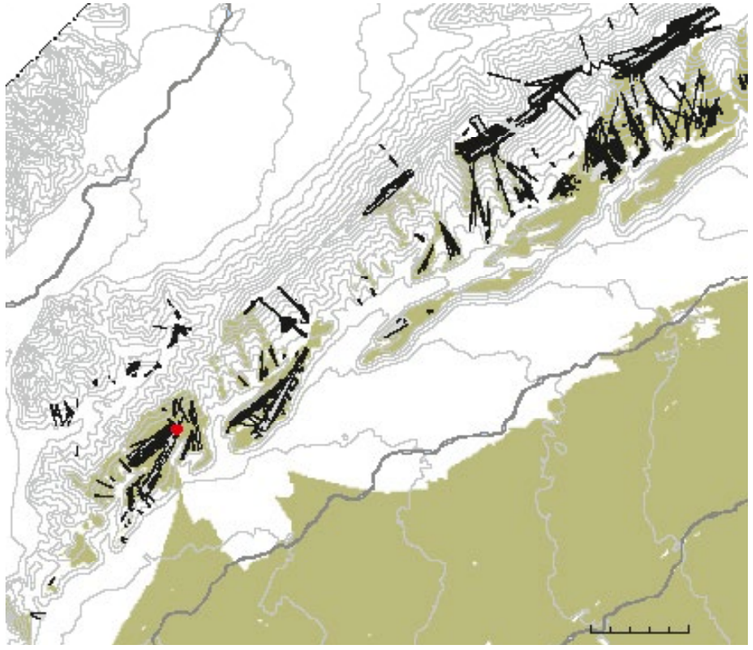

Fig. 62
Localización de un poste de madera sobre un trapecio en la Cresta de Sacramento, al norte de Palpa (marcado en rojo). Asumiendo que la altura del poste fue de cuatro metros, éste podía ser visto desde las zonas del valle (marcadas en verde) y a lo largo de la pendiente.

Cabezas en postes

En los geoglifos que se ubican en la región de Palpa se han encontrado restos de postes de madera que pudieron haber servido para sostener techos de diversas alturas. Estos elementos le habrían añadido un llamativo elemento vertical a la configuración horizontal del espacio sagrado del geoglifo, otorgándole así una nueva mirada a este espacio. Si bien desconocemos cuál fue su verdadera función, es posible que hayan servido como referencias para la orientación visual en el desierto o como estandartes para exhibir cabezas trofeo, como se puede apreciar en este par de vasijas de cerámica de la colección del MALI.

En el vaso representado en el Cat.8, la cabeza se encuentra atada a un poste, el que pareciera sujetar una suerte de bandera, posiblemente para señalar alguna localización en las pampas. Por otro lado el cántaro (Cat.7) parece representar la misma idea de la pieza anteriormente mencionada pero en una versión más sintética.

Cat. 7
Cántaro con motivos pictóricos de cabezas trofeo sostenidas. Modelado y pintado. 10,3 x 12,5 x 12,5 cm. Museo de Arte de Lima. Donación Memoria Prado. IV 2.0 0329

Cat. 8
Vaso con representación pictórica de cabezas trofeo sostenidas a postes. Modelado y pintado. 14,7 x 13 x 13 cm. Museo de Arte de Lima. Donación Memoria Prado.
IV 2.0 1203

residential sites may have been tokens of pilgrimage used to signal to others in the village that visits to the center had been made.[14] Polychrome ceramics were also the only vessels used at Marcaya and other residential sites for the serving of food and drink. Thus, they were not only used at Cahuachi, but they were also ubiquitous at home and they served as a reminder of Nasca religion and Cahuachi's religious authority.

In summary, families who lived at the site of Marcaya appear to have subsisted on a mixed-agropastoral economy, were relatively self-sufficient and economically independent. All households contained evidence for food storage and processing, cooking and consumption, as well as lithic and textile production, all requisite components to sustain a single domestic unit. The one exception to economic self-sufficiency at Marcaya is that pottery does not appear to have been produced at the site in great quantities, if at all. Indeed, as stated, the majority of polychrome ceramics appear to have been produced at Cahuachi. Thus, this small community –like many others in the region– were tied to a broader social realm through activities taking place at Cahuachi.[15] Indeed, these small residential sites collectively appear to have supported activities taking place at Cahuachi and the Nasca Lines.

Ceremonial Sites

While Cahuachi in the southern Nasca region served as the paramount civic-ceremonial center for the south coast of Peru during the Early Nasca epoch, other sites also rose to minor prominence and were important ceremonially, albeit at a larger scale, as well. These sites were important–though very different–components of residential life as well. For example, Los Molinos in Palpa was a secondary ceremonial center that appeared to be a smaller version of Cahuachi.[16] Another of these sites is the recently investigated Cerro Tortolita, located in the Upper Ica Valley. Current investigations there are attempting to understand who lived there, its relation to smaller residential sites like Marcaya in the Ica Valley, and also how Cerro Tortolita fits into the wider ceremonial realm dominated by Cahuachi in the Nasca Valley.

Cerro Tortolita is a twenty-hectare site divided into a civic-ceremonial sector and a residential sector. The residential sector, approximately 10 times the size of Marcaya is composed of several hundred structures that are located on the steep hillside above the southern flank of the Ica River Valley.[17] The organization of these structures bear strong resemblance to other residential sites in the region and appear to be organized into clusters along terraces that supported individual households. The surfaces of these structures are littered with Nasca polychrome ceramics dating to the Early Intermediate period–mostly the Early Nasca epoch. Thus, it appears to have been occupied first at a time that Marcaya was flourishing as a small village about 100 kilometers to the south.

Residents of Cerro Tortolita supported and maintained its civic-ceremonial sector. This sector of Cerro Tortolita is approximately 10 hectares in size whose most imposing architectural feature is a u-shaped platform mound. This mound is an architecturally complex feature with three sub-mounds forming a "U" with two arms and a base surrounding a large 25 x 50 meters central plaza (fig. 50). The western end of the u-shaped mound is composed of very complex architecture made up of finely plastered, and sometimes painted, walls. The summit of the mound has restricted access leading to an internal enclosure and small platform with a commanding view of the valley to the north and of the central plaza to the east. Because of its restricted access, its location with commanding views, and the finely plastered walls comprising the bulk of the architecture, the platform and small enclosure appear to have been reserved for elite activities and may have housed an elite residence.[18] This conclusion is based on work at Cahuachi where similar architectural features have been interpreted as elite residences.[19]

Other parts of the u-shaped mound, as well as associated areas of the civic-ceremonial sector, are composed of terraces that were the locus of a wide range of activities. These activities included metallurgical and ceramic production; food preparation and consumption; and the use of ritual objects such as figurines (fig. 49). The plaza itself, while kept generally clean –like most Andean plazas– revealed evidence for ritual activities including some small fragments of *Spondylus* –an important bivalve found 1000 kilometers away off the coast of Ecuador– and panpipes, as well as Early Nasca ceramics. Overall, the entire sector appears to have been dedicated to production, ritual activities and the support of a relatively small elite residence, while most people lived in the residential sector.

The ceramic assemblage at Cerro Tortolita is made up of polychrome ceramics dating mostly to the Early Nasca epoch (fig. 49). Although fragments of later periods are found, these appear to post-date the principal occupation of the site. Overall, investigations in the civic-ceremonial sector of Cerro Tortolita suggest a sustained occupation with multiple rebuilding events during the first few centuries of the Early Intermediate period. Diagnostic ceramics and radiocarbon dates point to an occupation that began sometime during the 3rd century A.D. and possibly continued into the 5th century.

Like the diet reconstructed at Early Nasca residential sites, food species recovered at Cerro Tortolita indicate a mixed agro-pastoral economy with botanical remains that included peanut, squash, *pacae*, maize, yucca, *lucuma* and *pallar*. Marine species, especially *Choromytilus chorus*, were abundant as were faunal remains composed primarily of domesticated camelids. Ceremonial species such as coca were also recovered.

Obsidian was rare in excavations at Cerro Tortolita –as were other exotic items– though *Spondylus* was present in certain contexts. Firing features were not found, however, evidence for ceramic production was found in various contexts and included raw clay and unfired ceramic fragments; fragments of ceramics with ghost images (created when pots were stacked in a firing feature); pigment; potting implements made of bone, shell and ceramic; and large fragments of pottery that were used in the firing process by covering pots as they were being fired. Burials were not found in abundance at Cerro Tortolita, and when revealed on the surface, post-dated the primary occupation of the site.

In sum, Cerro Tortolita provides a window into our understanding of life in the Upper Ica Valley. The site bears some strong resemblances to Cahuachi, located 100 kilometers to the south, though at a much smaller scale. Parallels in the site architecture and the material recovered suggest that Cerro Tortolita served as a secondary ceremonial center in the Upper Ica valley during the Early Intermediate period. Residents at Cerro Tortolita appear to have supported activities taking place within the civic-ceremonial sector involving elites, private rituals, group ceremonies, and the production of crafts. Unclear at this juncture, however, is how integrated residents at Cerro Tortolita were with the wider Cahuachi pilgrimage system. One hypothesis is that local residents were engaged in group ceremonial activities locally, while elites of Cerro Tortolita had access to activities taking place at Cahuachi far to the south.

Conclusions

In sum, while both date to the Early Nasca epoch, Cerro Tortolita and Marcaya provide very different examples of Early Nasca sites. Marcaya is a typical residential site composed of independent and relatively self-sufficient households tied to activities taking place at Cahuachi. Residents of Marcaya–much like other residential sites throughout the region–produced what they needed to sustain a daily existence except for most of their polychrome pottery. This polychrome pottery was an important component of Nasca religion that was inextricably linked to the center Cahuachi, where much of this pottery was manufactured.

Cerro Tortolita, on the other hand, is one example of a limited number of civic-ceremonial centers present on the south coast during Early Nasca. A relatively large population was in residence at Cerro Tortolita, but in contrast to Marcaya and comparable residential sites, elites were also in residence at the center. The residential sector of the site bears resemblance to other residential sites on the south coast of Peru such as Marcaya –though at a larger scale– during this time. Activities in the civic-ceremonial sector of the site, however, focused on supporting elite activities and public ceremonies in the plaza. Evidence for craft production (including metallurgy and ceramic production) and ritual (both private and public) is found in the civic-ceremonial sector. Though at this juncture we don't know what kind of ceramics were manufactured at Cerro Tortolita, future research will illuminate how production of ceramics at Cerro Tortolita was integrated into the wider network of Nasca society.

Overall, investigations at sites outside of Cahuachi and away from the Nasca Lines paint a much more complete picture of life in Nasca. Smaller residential sites like Marcaya, and secondary ceremonial centers like Cerro Tortolita were equally important in Nasca's social, political, economic and religious milieu. Work at these sites –and other similar sites– will be necessary in the future to fully understand the ancient Nasca.

4.1 THE GEOGLYPHS: IMAGES AND SETTINGS IN THE DESERT OF NAZCA AND PALPA

Karsten Lambers

The geoglyphs found in the Nazca basin are one of the most extraordinary cultural legacies of pre-Hispanic America. Over a surface area of more than five hundred km^2, the ancient inhabitants of Nazca succeeded in transforming the rocky desert terrain that stretches from the valley oases to the foot of the Andes, turning the pampas, hillocks, and nearby foothills into a space populated by large-scale figures. These markings in the soil are now known as geoglyphs, or "engravings in the earth." Except for those cases where the geoglyphs have been destroyed by humans, favorable climate conditions have helped conserve them to this day.

No one knows for sure how many there are in the Nazca basin, but they must number in the thousands. Of all the existing geoglyphs, only a small handful have attracted special attention: a series of easily identifiable zoomorphic figures, most notably those of a hummingbird, a pelican, a monkey, a dog, a spider, a lizard, a whale, and beings with human traits. Today, these figurative geoglyphs are the most popular among tourists who pay to be flown over the pampas in small aircrafts The geometric geoglyphs, however, are much more numerous in the Nazca basin, and may be subdivided based on their line forms (straight, zigzag, curved, spiral) or shapes (rectangles, trapezoids, triangles).[1] While the figures with human traits generally only measure a few meters long, the geometric geoglyphs can reach impressive sizes. The largest known trapezoid measures nearly 1,9 km long (fig. 51), while some of the straight lines are significantly longer. Many lines converge at elevated points in the terrain, where they form line centers (fig. 52). Due to their large number, the geoglyphs often crisscross and intersect each other. A high density of them may be observed along the river valleys (including those of the Ingenio and Viscas Rivers), a concentration that declines as one gets further away from the river.

For the contemporary observer, the geoglyphs may seem mysterious at first, given the lack of comparable phenomena around the world. They raise questions such as: How could the desert have been transformed on such a large scale? Who created the geoglyphs and when? And particularly: Why were they drawn, and using what objects? To answer all of these questions, investigations have gradually come up with more or less clear responses. This makes the geoglyphs somewhat less mysterious, although certainly no less interesting. Our current knowledge comes from the archaeological investigations that begin in the mid-1920s.[2]

There have been occasional mentions of the geoglyphs by travelers and chroniclers since the sixteenth century.[3] In 1926, Toribio Mejía Xesspe, Julio C. Tello, and Alfred Kroeber became the first archaeologists to describe them.[4] At that time, however, the geoglyphs were not the main focus of archaeological investigations; rather, they were only superficially documented during the excavation of cemeteries. It wasn't until the 1930s that their true size and importance was initially recognized. This was due primarily to increased commercial air traffic along the Peruvian coast, providing an aerial view of the extent to which the desert was marked with these remains. In the early 1940s, the historian Paul Kosok gave a decisive boost to the investigation, by being the first to interpret them as astronomical markings or a calendar. On June 22, 1941, the day of the winter solstice in the Southern Hemisphere, Kosok discovered the first zoomorphic figure, and –more importantly– observed that the setting sun coincided with the end point of a line measuring kilometers long, located to the south of Palpa (fig. 52).[5] Some years later, the archaeologist Hans Horkheimer mapped this line, along with other nearby lines and a group of other geoglyphs, for the first time, interpreting them as a setting associated with ancestor worship.[6]

While Horkheimer's hypothesis was not widely accepted, the astronomical interpretation of the geoglyphs posited by Kosok was extensively disseminated, thanks in particular to the German mathematician Maria Reiche. Reiche carried out additional investigations, first at Kosok's behest and later independently, over the course of several decades, initially working throughout the entire Nazca basin but later focusing on the pampas of Nazca. Reiche was the first to map many of the geoglyphs. She analyzed their orientation and construction techniques, discovering numerous figures and making significant efforts to protect them.[7] In 1967, the astronomer Gerald Hawkins tested the astronomical interpretation of the geoglyphs based on the cartographic data and measurements gathered in the Ingenio Valley. Hawkins found that only a few of them coincided with astronomical criteria.[8] The archaeoastronomers Anthony Aveni and Clive Ruggles reached a similar conclusion in the late 1980s, performing additional investigations as part of a large-scale research project directed by Aveni.[9] The study focus here was the line centers located on the pampas of Nazca, based on which it was possible to identify a spatial order in the apparent chaos of the geoglyphs. In accordance with Andean cultural traditions, the lines were interpreted as procession paths and an expression of social organization.

As part of the project directed by Aveni, the geoglyphs were studied in association with other archaeological findings –such as pottery shards or stone constructions– for the first time. Previously, they had only been studied as isolated elements.[10]

During the 1980s, other geoglyphs were analyzed by the Italian architect Giuseppe Orefici as part of the Cahuachi Project, carried out with the primary objective of studying the Nasca culture's major center, Cahuachi, interpreted as the primary religious center during the Early Nasca period (50-300 AD).[11] Aveni and Orefici's attempt to once again take a look at the geoglyphs with a greater emphasis on their historical and cultural context also marked efforts in the 1980s by the anthropologist Johan Reinhard, who suggested a possible connection between the geoglyphs, water, and the worship of the mountains.[12] A few years later, the archaeologists Helaine Silverman, David Browne, and José Baraybar began to once again study them in the different valleys of the Nazca basin, outside the pampas of Nazca, which had been practically forgotten. These investigators were able to demonstrate the close relationship between geoglyphs and settlements.[13] Silverman interpreted the lines leading to Cahuachi as pilgrimage routes.[14]

As part of the project begun in the mid-1990s by the archaeologists Markus Reindel and Johny Isla in Palpa, located in the northern part of the Nazca basin, the geoglyphs were registered for the first time using archaeological criteria, making it possible to gain new knowledge regarding their function, chronology, and spatial organization.[15] At the same time, the geodetic surveyors Bernd Teichert and Christiane Richter undertook a research project in the pampas of Nazca, aimed at mapping the geoglyphs and once again testing the astronomical hypothesis.[16] Since 2010, other archaeological works have been carried out, with only partial results available as of this time.[17]

The aforementioned investigations offer a solid basis for answering the questions regarding the "who, how, when, and why" of the geoglyphs. To attempt this, special reference will be made below to the results obtained in Palpa.

How? Construction Technique and Layout

The question of how the geoglyphs were made is easy to answer. All one has to do is observe them closely in the field. The geoglyphs are defined by contrasting colors between the original desert surface, with its dark shades, and the surface modified by human beings, which is lighter in color. These contrasting colors are especially easy to create due to the geomorphology of the Nazca basin. As opposed to the neighboring valleys to the north and the south, this region is marked by the particularity of an additional mountain chain located between the foot of the Andes and the Pacific Ocean. This coastal cordillera acts as a barrier, causing the stagnation of the erosion material that is transported downhill by the rivers on the western flank of the Andes. In this way, the Nazca basin was filled in over long periods of time –up until approximately 45.000 years ago– with coarse pebbles and fine sediments, whose surface formed what is now the pampas.[18] These immense deposits later became the site of the rivers, which –rather than reaching the sea separately– converge before the coastal cordillera and cross it at a single point: the Río Grande river. On the surface of the alluvial layers, the wind gradually cleared away the fine sands, leaving behind a dense layer of small stones that is known as "desert pavement," which took on a dark patina over time due to oxidation processes[19]. Thus, in order to create a geoglyph, all that had to be done was to remove the so-called desert pavement, manually picking up rocks and leaving the clear, sandy sediment below visible to the eye. By piling these rocks up along the edges of the cleared areas, this highlighted the color contrast between the dark desert soil and the light-colored sand.

While this basic construction technique was the most widespread, certain variations can be found. For example, in the case of the anthropomorphic figures, the rocks that were picked up were not only piled along the edges of the cleared surfaces, but also organized inside these areas to create eyes,

mouths, and other anatomical details (fig. 53). In the large trapezoids, it is frequently possible to observe how bigger rocks were lined up along the wide base of the trapezoid, in some cases being used to build platforms (see below). Finally, on sloping terrains where constant erosion did not allow for the formation of desert pavement, straight lines were scored into the earth to make them more visible. This is why they are deeper than the lines found on flat terrains.

Having shown that the construction technique used for the geoglyphs was relatively simple, we must now pose the question of how the geoglyphs were given form. The smallest ones –such as the anthropomorphic figures or the lines on the slopes, for example– are perfectly visible from ground level, such that their outlines and layout could be verified without a problem. The larger geoglyphs, on the other hand –such as the trapezoids or lines– which could not be viewed in their entirety by the naked eye due to their size, required measurements or markings that, although it may not seem like it, were technically easy to perform. Using "sights" or vertically positioned stones, it is possible to trace straight lines with precision at great distances, as verified by stones driven into the ground along unfinished trapezoids. The trickiest question is how the large, complex zoomorphic figures were made, given that they cannot be viewed completely from the ground, consisting mostly as they do of a single, continuous line that depicts the animal figure with a certain degree of abstraction. These forms may have initially been drawn at a smaller scale, and then expanded over the terrain with the help of strings,[20] although there is no evidence proving the use of this procedure.

Thus, the drawing of the geoglyphs was likely not all that complex, in technical terms. The major challenge, rather, lay in organizing and executing the tasks. There were probably specialists responsible for selecting the site, as well as determining the size and shape of a figure. The uniform repertoire of the geoglyphs throughout the Nazca basin suggests that these specialists were in contact with one another, even during periods of political fragmentation, and observed certain standards. The actual creation of the geoglyphs, on the other hand, may have been the job of ordinary inhabitants, along with other activities such as farming and different trades. The numerous unfinished geoglyphs effectively prove that the work process was frequently interrupted, and was probably carried out in small steps over prolonged periods of time, which appears to back this theory.

Who and When? Social and Historical/Cultural Context

The hypothesis that the geoglyphs were created by the autochthonous population goes hand-in-hand with the fact that the many pottery shards found on the surface are identical to the ceramics associated with the settlements and cemeteries in the Nazca basin. Part of this pottery, especially the storage vessels, was probably used to provide workers with food and water. The higher-quality ceramics, on the other hand, must have been used for other purposes, which will be discussed below.

The fine polychrome ceramics found on the geoglyphs have been the main source for dating them. Even so, it should be noted that it is impossible to be completely certain when and how a pottery shard reached a geoglyph, given that this may have happened hundreds of years after it was created. Human activities in the inhospitable desert are limited to a bare minimum, however, meaning that there are few options as to how and when the pottery may have ended up there (one major exception will be discussed further below). It may thus be plausibly supposed that the presence of pottery on the geoglyphs is tied to their creation and use. To define this lapse of time through a dating process, we must look to the oldest pottery shard found on a geoglyph.

Another aspect to be taken into account is the fact that, in many places, several geoglyphs crisscross one another (fig. 54). In those places where it is possible to recognize which geoglyph is intersecting the other –something that cannot always be done– this stratigraphy provides additional information that is helpful in establishing a chronological order. The use of methods taken from the natural sciences –such as the dating of the patina accumulated on the rocks that were removed,[21] or the luminescence of the rocks that were covered up as part of the same process–[22] has not, thus far, made it possible to date the figures with the required precision. In the case of the figurative geoglyphs, stylistic and iconographic comparisons may also be useful in dating them, given that certain motifs appear on media such as ceramics or textiles that can be classified chronologically with greater certainty. These comparisons show that the first geoglyphs were created during the Early Horizon (Paracas culture, approx. 840-260 B.C).[23] They depict human figures, such as those found rendered in greater detail on funerary textiles (fig. 53). Of special interest, however, is another parallel, given that such figures also appeared as images in rock art, frequently drawn on large stones and rocks located in sloping areas.[24] This was more than likely the origin of the geoglyph tradition, since many of the anthropomorphic figures are similar to the rock art images not only in style and design, but also in terms of their location on the terrain. It thus seems possible that some known designs –as depicted on a variety of media– were transferred from the rocks to the surrounding desert soil at some point during the Early Horizon. The fact that many of these figures are intersected by later lines confirms their position early in the chronological sequence.

Discoveries of ceramics on these early anthropomorphic figures, on the other hand, are extraordinarily rare. This suggests that no regular activities took place on or near them. Rather, it seems likely –once again, similar to the case of the rock art images– that these depictions were intended to be observed from a certain distance. This was possible thanks to their inclined position on the slopes. When activities were carried out in connection to these early figures, they must have been performed at a distance from which the figures could be discerned. Although there is no definite information regarding the nature of such activities, ceramic offerings from the Late Paracas period have been found at different places in Palpa, thus proving that the creation of geoglyphs was not the only activity performed in the desert during this early phase. These ceramic offerings may have been made while gazing upon the anthropomorphic figures.

A relationship between the geoglyphs and pottery becomes clear from the start of the Nasca period, around 260 BC. From this point on, all of the pre-Hispanic cultural periods that followed in this area are accounted for by ceramics found on the geoglyphs, although in varying quantities. These findings primarily consist of isolated pottery shards, making it difficult to explain on a case-by-case basis how they got there. There is also a considerable number of fine ceramic vessels, however, fragmented but nearly complete, which were probably intentionally shattered onsite. (fig. 55) These are found primarily along the lines and at the edges of the trapezoids. Their presence is likely tied to the regular transiting on the geoglyphs; judging by the figures' compacted surfaces, it can be presumed that they were affected by recurring foot traffic (see below). Following the start of the Early Intermediate period (Nasca culture, approx. 200 BC-650 AD), there is a noticeable increase in the number of findings. The peak period for the drawing and use of the geoglyphs clearly dates to the Early Nasca era (approx. 50-300 AD). After that, the number of associated findings declines slowly but steadily until the start of the Middle Horizon (approx. 650 AD). In the surroundings of Palpa, a series of ceramic vessels from the eighth century appear to signify the final stage in the use of the geoglyphs.

There are certain regional differences, however, that are worth noting. While the northern part of the Nazca basin was temporarily abandoned during the Middle Horizon,[25] a considerable number of pottery sherds from this phase have been found on the geoglyphs in the Nazca valley area, where there is evidence of settlements from the Wari era.[26] This may mean that, in the southern part of the Nazca basin, the geoglyphs were in use for a longer time than in the north. But there is also a different possible interpretation: the ceramic findings in this region could be related to through-traffic on the pampas of Nazca. To travel from the southern part of the Nazca basin to the north, the easiest path is not along the rivers, as in other parts of the basin, but rather over the pampas of Nazca, where the modern-day Panamericana Sur highway also runs. The existing lines would thus be the easiest route, in such case. Thus, there seems to have always been human traffic on the pampas of Nazca, by people who must have left behind traces of their passing in the form of ceramic remains. This situation persisted through the Late Intermediate period (Ica culture, approx. 1180-1400 AD). Numerous pottery shards dating from this period have been found on the geoglyphs, in both the north and the south of the Nazca basin. While in the south, these findings have been interpreted as signs that the geoglyphs were still in use during that period,[27] in the Palpa region it is clear that there is no relationship. Here, the pottery shards must be understood in the context of the settlements from the Late Intermediate period established far from the valleys for defensive purposes, and thus set up on the pampas.[28] Numerous paths connected these settlements to one another, and to the valleys. Both the settlements and the paths were habitually located in the middle and on top of the geoglyphs, which demonstrates that the geoglyphs' importance must have declined by that time.

Thus, the tradition of the geoglyphs seems to have come to an end well before the colonial era.

Why? Function and Meaning

The question of why the geoglyphs exist is difficult to answer, given that we lack any type of preserved oral or written testimony. Similar monuments that might aid in the task of interpretation, on the other hand, are few and far between. While there are many geoglyphs in desert regions along the western coast of the Americas, from California to Chile, nowhere are they as numerous or as singular as in the Nazca basin.[29] Furthermore, we must bear in mind that the geoglyphs were created over the course of more than one thousand years. Considering that the geoglyphs were used during so many centuries, their purpose may well have changed over time, i.e., the geoglyphs may have fulfilled different functions at different points in time. Despite these difficulties, archaeological investigations offer important indications for purposes of interpretation, some of which have already been mentioned.

As discussed above, the origin of the geoglyphs' tradition can be dated back to the Early Horizon (approx. 800-200 BC), when the motifs were first transferred from other supporting media to the ground itself. These designs represent animals, humans, and supernatural beings, i.e., significant elements taken from the population's physical surroundings and mythological beliefs.[30] For example, there is the Oculate Being, who is considered the predecessor of the Anthropomorphic Mythical Being of the Nasca period (fig. 53).[31] Both were likely the most important mythological figures of their time. The images depicted in these figures were probably tied to ceremonial activities performed in their surroundings, such as ceramic offerings. Although we lack information on the beliefs behind these actions, we find here an expression of two aspects that may have persisted up until the end of the geoglyph phenomenon: 1) the modification of the desert based on cultural concepts and needs, and its consequent inclusion in the cultural landscape, which was otherwise centered on the valleys; and 2) the regular performance of collective activities in the desert. As such, the geoglyphs fulfilled a significant cultural and social function from the very start.

Once the inhabitants discovered the structuring possibilities offered by the desert soil for the drawing of geoglyphs, a phenomenon arose that became independent from that found in other media. At first, the geoglyphs were drawn in the foothills, and later on the pampas. On flat surfaces, they served as the simplest option for transit. These surfaces also offered space for more geoglyphs of a larger size (figs. 51-55 and Fig. 60). Around the time of the Early Nasca period (approx. 50-300 AD), a vast corpus of geoglyphs was developed, which were thereafter drawn on the pampas above the valleys, although the foothills and slopes still continued to be used. Due to the gradual increase in the number and size of the geoglyphs, the social aspect of the collective work required to create them took on increasing importance. As previously noted, it may be supposed that a large part of the population temporarily participated in this activity. Thus, both the use and the creation of the geoglyphs played an important role in social cohesion. Toward the end of the Nasca era, however, the number and formal diversity of the new geoglyphs began to decline.

With the passage of time, the size of the geoglyphs drawn on the pampas increased, as a result of which it became impossible to view them in their entirety with the naked eye. This meant that they could no longer be used as images to be observed from a distance. The activities that were originally carried out in the spaces around the geoglyphs started to be performed on top of them. This is evidenced by the large quantity of ceramics found on the geoglyphs. Another important aspect to be taken into account is the compaction of the light-colored sediment on the lines, repeatedly crisscrossed by foot traffic, as well as in the interior surfaces of the trapezoids, a fact that was observed on the ground and further verified through magnetic measurements.[32] This means that there was regular human transit –whether by lone individuals or groups– circulating along the geometric geoglyphs, who made offerings consisting of ceramic vessels. It may thus be assumed that the geoglyphs served as the site of processions, which were probably governed by specific patterns. One indication of this is the recurring combination of different types of geoglyphs, which must have been intended to establish predetermined routes.

The offerings were also placed on low rock platforms found especially in the large trapezoids (see below). The typical combination consists of two small platforms located at the narrow end, and a large platform located at the trapezoid's wide base (fig. 60). There are also individual platforms, however, or trapezoids without platforms. Early on in the investigations into the geoglyphs, it was assumed that these platforms must have contained burials.[33] After the initial excavations failed to produce any discoveries of this type, the platforms ceased to be of interest to investigators. But recent excavations near Palpa have found evidence that offerings were placed on these platforms, including fine polychrome ceramics, ears of corn wrapped in textiles, and earrings made from *spondylus* shells and river crabs (fig. 61). These findings not only show that the platforms were likely used as reference points for many activities performed on the geoglyphs, but that they also offer a glimpse into the beliefs tied to these activities, given that these discoveries are associated, in a broader sense, with water and fertility. This applies not only to the corn, which came from irrigated fields, or the river crabs, which were only found seasonally, when the rivers' water levels were highest; rather, the clearest relationship can be found in the case of the *spondylus* shells, which are normally only found in the warm waters off the cost of present-day Ecuador. During those years in which the *El Ñino* climatic phenomenon occurs, however, causing the Pacific's ocean currents to shift, this shell can also be found further south, along the Peruvian coast. During these years, precipitation occurs in regions where it normally does not rain. In view of this connection, the *spondylus* shell became a symbol of water and fertility throughout the Andean area.[34]

As such, the context of the activities that were performed on the geometric geoglyphs may also have been associated with the cult of water and fertility. This appears to be possible due to the region's arid climate and heavy dependence on rivers with seasonal flow volumes. There is also one additional detail that supports this assumption: the region's climate gradually became drier during the Nasca era, meaning that the inhabitants' preoccupation with water must have taken on an increasingly important role.[35] The fact that some of the platforms on the trapezoids from the Early Nazca period (approx. 50-300 AD) were built not before the Middle Nazca phase (approx. 300-450 AD) is thus consistent with this interpretation. As such, the issue of water and fertility may have constituted the backdrop for activities on the geoglyphs, at least during the late phases of the Nazca era.

On some platforms, the remains of wooden posts have been found, in some cases, small posts around the platforms that may have held up a lightweight roof; and in others, solitary large, straight posts made from willow trees, embedded deep in the soil, which probably reached a considerable height. These posts added a striking vertical element to the geoglyphs' horizontal layout, a dimension that is completely absent when viewing the geoglyphs today. We do not know what these posts might have been used for; whether, for example, they held up banners or even trophy heads, as may be observed on one well-known ceramic vessel (Cat.8).[36] It is possible that the posts were used for visual orientation in the desert, amidst the numerous geoglyphs. As demonstrated by the visibility analyses performed to the north of Palpa, the location of one of these posts was visible from all of the major surrounding geoglyph complexes, as well as from most of the valley (fig. 62).

That, along with other visibility analyses, has provided important new knowledge on the geoglyphs' spatial organization. As demonstrated by a systematic comparison of the general visibility of different points on the geoglyphs, on the one hand, and randomly selected points across the terrain, on the other, it is evident that the geoglyphs are much more visible. This indicates that the sites where they were created were purposely selected based on their visibility, which means that the numerous activities that were carried out on the geoglyphs were not only relevant to those participating in them, but were also apparently intended to be viewed by others. This was probably one of the reasons –in addition to greater accessibility– for the congregation of the geoglyphs along the valleys. Anyone walking on foot through the desert knows that in such places, moving people can be spotted at a great distance; e.g., throughout the Palpa Valley. Thus, for example, when a group of persons gathered on a trapezoid to hold a procession and offer up vessels among the geoglyphs or on a stone platform, this could have been observed from a significant distance. As such, this activity may have also been intended to define or manifest the role of a certain group within the society. Although we lack details on social organization during the Nasca period, the geoglyphs must have played a role in this regard.

The relationship between the geoglyphs and water also fits perfectly with previously suggested hypotheses regarding the geoglyphs' orientation toward the mountain peaks, since water comes from the mountains. This hypothesis may also be explored with the help of a visibility analysis. The result of these analyses suggests that the vast majority of geoglyphs found

around Palpa are not oriented toward the mountains, with those that are numbering so few that it may well be a coincidence. As such, the supposed water cult did not lead to the alignment of the geoglyphs with the mountains; rather, it was the activities performed on the geoglyphs that were apparently intended to be observed.

The geoglyphs, which were originally conceived of as images, were thus turned into stages starting in the early Nasca period. Their designs ceased to be depicted on ceramics or textiles, and these media began to be used to depict the activities carried out on the geoglyphs. This means that all current interpretations that hold the geoglyphs to be markings untouched by people in the desert are mistaken, since such interpretations fail to account for important factors such as the vertical dimension created by the stone platforms, wooden posts, and especially, the people, as well as the dynamic in which people journeyed time and again to the desert to perform activities on the geoglyphs. When the climate became drier between the Early Intermediate period and the Middle Horizon, and the population from the northern part of the Nazca basin gradually emigrated elsewhere, the geoglyphs and the activities associated with them lost their social significance, ultimately coming to an end following more than a millennium of activity.

Conclusion

The archaeological investigations on the geoglyphs have led to important findings in recent years. It is thanks to such research that the geoglyphs now seem to us much less mysterious, although just as remarkable as ever. The Nasca inhabitants succeeded in transforming one of the driest deserts in the world, over the course of many centuries, to serve the region's inhabitants as an expression of their cultural ideas and a setting for their social activities. In the beginning, this space was used to depict important elements from their worldview, later becoming the setting for ceremonies centered on water and fertility. The physical markings in the terrain remain visible to this day, having earned recognition –and rightly so– as part of the cultural heritage of Peru and all humankind, according to the Peruvian government and the UNESCO. That is why they deserve to be protected and preserved by all of us. Nevertheless, the key to understanding the geoglyphs was held only by the people who conceived, drew, and used them. Without them, the geoglyphs will always be simply a series of mysterious marks in the desert.

4.2 LINES AND FIGURES OF THE PAMPA DE NAZCA

Masato Sakai and Jorge Olano

Introduction

The geoglyphs of the Pampa de Nazca, located between the Ingenio and Nazca valleys on the southern coast of Peru, have been the subject of many investigations over the years. Due to the sheer number of geoglyphs that exist in this area, however, the investigations conducted to date have been limited to specific parts of the Pampa. The area of study has generally depended on each investigator's objectives and availability of time. For such reason, we still do not have detailed records of the distribution, characteristics, and material associations of the geoglyphs on the Pampa.

For the last five years, our archaeological investigative team has engaged in work aimed at precisely determining the distribution of the geoglyphs on the Pampa and the cultural materials associated with their surroundings. The purpose of this study is to discuss the timeline of use of the linear and figurative geoglyphs, as well as the changes in this activity over time.

Background

The first archaeological records of geoglyphs on the Pampa de Nazca were taken by Kroeber[1] and Mejía Xesspe[2] in the 1920s. Later on, Kosok,[3] Reiche,[4] and others created more records, drawing location maps of the most important figures and lines. In the 1980s, Aveni led a multidisciplinary investigative team in studying the centers of radial lines. As part of this investigation, Clarkson[5] analyzed the pottery shards found near the line centers. For Clarkson, the analysis of pottery shards indicated that the lines were used mainly during the Middle Horizon and the Late Intermediate period. However, based on their exploration of the geoglyphs of the Ingenio valley, Silverman and Browne[6] dispute these results, arguing that the lines are primarily associated with the Early Intermediate period.

Different suggestions have been made with regard to the functions of the geoglyphs. Some maintain that the geoglyphs were tied to rituals involved in the worship of mountains, water, fertility,[7] or celestial movements,[8] and that they acted as roads,[9] labyrinths,[10] ritual settings,[11] and others. It has also been suggested that the geoglyphs depict the social order of the *ayllus*.[12] The recurring presence of broken vessels at the geoglyphs on the Pampa de Nazca indicates that they were the site of ritual activities in which vessels were most likely shattered intentionally.[13]

Methodology

Our investigation on the Pampa de Nazca began with the identification of geoglyphs using images from the Quick Bird and World View 2 satellites, which offer a resolution of sixty one cm and forty six cm, respectively.[14] Using these images, we created a digital GIS map that shows the location of the geoglyphs and ceramics on the Pampa. This map was used as a reference in the field exploration works. Over the last few years, the greatest point of interest in our investigations was to register all of the ceramic remains associated with the figures and lines of the Pampa.[15] The stylistic identification of pottery shards and the analysis of their distribution on the digital map make it possible to determine the timeline of human activity on the geoglyphs and changes in this activity over time.

Geoglyphs

The geoglyphs of the Pampa de Nazca can be classified into figurative, linear, and geometric groups. The majority of figurative geoglyphs are biomorphous, although there are also some that depict artifacts such as *antaras*, *tupus*, and others. The linear geoglyphs are the most common, and can be found in a wide variety of sizes and shapes. Some lines run up to ten kilometers long, while other measure just a few meters. On the Pampa de Nazca, lines can frequently be found in radial arrangements around a mound or hillock. The geometric geoglyphs, which we do not address specifically in this study, can be found in the form of trapezoids, triangles, spirals, zig-zags, etc.

Depending on the technique used in their creation, the geoglyphs can be divided into two types: figures made with a clear, continuous line that forms the shape of the animal, plant, or object depicted; and figures formed by the contrast between light and dark areas produced by removing and/or accumulating stones. Geoglyphs of the first kind were made mostly on flat terrain, and generally measure over fifty meters long. The second type of geoglyph is mainly located on inclined slopes or hillsides, and generally measures less than fifty m. long.

Several of the images depicted in the first type of figure are similar to the drawings found on Early Nasca ceramics, indicating that they are associated with that era.[16] The discovery of Early Nazca pottery shards in the figure of the Monkey near the Ingenio Valley and the figures of the Whale and the Hummingbird near Nazca appear to confirm this theory.

Some geoglyphs of the second type display an iconography similar to that of the Early Horizon,[17] and probably belong to said period. To date, however, no ceramic remains have been found on the surface of this type of figure.

During the exploration of the Pampa, pottery shards were frequently found in and around linear geoglyphs. In many cases, the accumulation of pottery shards seems to have been the consequence of an event involving intentional shattering, probably related to the activity carried out on the geoglyphs, which we know by the name of "ritual ceramic breaking".[18] The stylistic identification of the ceramics found on the geoglyphs makes it possible to deduce the eras in which this activity was performed. According to our records, human activity with ceramics on the lines began in the Final Early Horizon and continued up until the Late Intermediate period.

Discussion

Early Horizon

The ceramics from the final phase of the Early Horizon period were found mainly on the lines located in the north and south of the Pampa, in areas adjacent to the sites of La Ventilla and Cahuachi, respectively (fig. 65). A minor concentration of lines with pottery shards from this era was also found close to the Nazca valley, near the point of confluence of the Aja and Tierras Blancas rivers. It is interesting to note here that in the Andean world, the points where rivers converge are known by the Quechua name of *tinkuy*, and are considered to be sacred, as a space where opposites meet.[19] It is possible that the ritual activities with geoglyphs and ceramics in areas near the *tinkuy* are related to these kinds of beliefs.

Another line with ceramics from the Final Early Horizon is located in the eastern part of the Pampa, near the cordillera. This line extends to each side in the direction of the middle Ingenio and Nazca valleys, stretching toward them like a kind of road. We believe that this line is associated with an inter-valley route that connected La Ventilla to the north, in Ingenio, with the river confluence, or *tinkuy*, to the south, in Nazca.

On the Pampa, the figurative geoglyphs of the Early Horizon were created on slopes or hillsides, primarily in the foothills of the cordillera to the east. They have also been found near roads, in the northwestern part of the Pampa, in an area that appears to be the midpoint on the route connecting the middle Ingenio valley and the lower Nazca valley. The figurative geoglyphs of the Early Horizon were likely used as signs on routes that connected the Ingenio and Nazca valleys.

Early Intermediate Period

Early Nasca

During this era, a noticeable increase in activity occurred, as evidenced by the ceramics found in the geoglyphs of the Pampa, especially in the same areas where broken vessels were found in the Final Early Horizon style (fig. 66). The increase in lines with Early Nasca pottery shards is particularly notable near the sites of La Ventilla and Cahuachi. The routes that connect the Ingenio and Nazca valleys across the Pampa also exhibit a great deal of activity involving lines and pottery shards during this era. In the northwestern part of the Pampa, near the area where the Ingenio and Grande Rivers converge –another *tinkuy*– the line activity is associated with Early Nasca ceramics. The general distribution of lines and Early Nasca ceramic shows that the rituals performed on the Pampa were closely linked to large sites with ceremonial activity such as Cahuachi, La Ventilla, and other sacred spaces where rivers converged.

In Early Nasca times, the route between the middle Ingenio and Nazca valleys across the Pampa remained active, with frequent transit registered between La Ventilla and the river confluence area in Nazca. During this era, there was a great deal of activity involving radial-type linear geoglyphs that converge at a single point, generally a mound or hillock.

Early Nasca figurative geoglyphs are located in flat areas of the Pampa. Due to their size, at over fifty meters long, they cannot be viewed in full from ground level, although their forms can be completely identified by walking around their perimeter. The figures from this era are located primarily on the Pampa near the Ingenio and Nazca valleys. Early Nazca ceramics have been discovered at the figures of the Monkey in Ingenio, and the Hummingbird and the Whale in Nazca. These geoglyphs may have acted as ceremonial sites where rituals were performed using ceramic vessels. Cahuachi reached its height during the Early Nasca period, meaning that the activity with ceramics at figurative geoglyphs may have been tied to the ceremonies carried out at this ceremonial center.

Middle Nasca and Late Nasca

There has been no activity registered at the figurative geoglyphs in connection with Middle or Late Nasca ceramics, unlike the linear geoglyphs, where ceramics from these eras have indeed been found. The presence of shattered Middle Nasca vessels on the Pampa is similar to that from the Early Nasca: intense near Cahuachi and La Ventilla, and in areas near river confluences (fig. 67). The activity near radial lines continues during the Middle Nasca period. Starting in the Late Nasca, however, ceramic activities on the lines diminished considerably (fig. 68).

In the eastern part of the Pampa, on the route that connected the Nazca and Ingenio valleys, Middle and Late Nasca ceramics have been discovered only to the north, on the lines near Ingenio. This distribution suggests that the breaking of vessels on the lines of this route no longer occurred as before. In the south, the broken vessels appear on lines crossing the inter-valley route longitudinally. These changes are likely related to the decline of Cahuachi[20] and the social changes that occurred in the Middle Nasca and Late Nasca periods.

Middle Horizon

The shattered vessels from the Middle Horizon discovered on lines (fig. 69) are widely dispersed and sparsely located on the Pampa. Indeed, there have been very few cases in which they have been registered on more than one line with the same radial center.

The most significant concentration of broken vessels from the Middle Horizon is located in the eastern part of the Pampa, near the cordillera, in connection with a group of lines that intertwine with one another, connecting the middle Ingenio and Nazca valleys. The ritual breaking of ceramic on the lines of the route between the Ingenio and Nazca valleys appears to recommence during this period. The Middle Horizon ceramics discovered on the lines are local in style. The local population was likely responsible for continuing the ritual activities with vessels on the lines of the Pampa during this period.

Early Intermediate Period

Late Intermediate ceramics have been found in linear geoglyphs distributed in different parts of the Pampa, although the largest concentrations occur in the Nazca and Ingenio valleys (fig. 70). In the Ingenio valley, Silverman also registered Late Intermediate ceramics broken *in situ* on the geoglyphs.[21]

During the Late Intermediate period, there is increased activity with ceramic vessels on the lines well inside the Pampa. Some of the lines appear to have been reused, mostly those connected to a radial center. Broken vessels have been discovered on paths connecting one line to another, an activity that seems to have started during this period. The connection between lines and paths appears to form a network of roads across the Pampa. Many routes use the lines themselves, meaning that they are not exactly the shortest way to get from one point to another in the valleys. This seems to suggest that transit along the lines did not necessarily play a practical role as a road, but instead may have been tied to activities of a ritual nature. At several points of the Pampa, shattered vessels from the Late Intermediate period have been found in groups, near a line or path. It is likely that rituals were carried out with vessels on lines and paths during this time. However, these activities may have been different from those practiced in earlier periods.[22]