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Space Archaeology. Potenziale der Weltraumarchäologie

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Abstract

In English-speaking research space archaeology has already existed as part of contemporary archaeology for nearly 20 years. In German-speaking environments it is not yet part of serious academic research. This contribution wants to change this situation. The aim is to present elements of established research in space archaeology and to connect them with approaches and media used in other humanities such as literature or film studies. To do so, I propose a new taxonomy of space archaeology: 1) *remains of civilizations in context of space travel and in outer space*, which can be split into a) the archaeological exploration of (infra-)structures for space travel that can be found on the earth, b) the archaeological exploration of human traces in outer space or on other celestial bodies, c) archaeological research on extraterrestrial civilizations and cultures on other planets. As a second relevant issue, the article focus on 2) *the archaeological exploration of today in the future*.

Keywords

Space archaeology, contemporary archaeology, future archaeology, archaeological methodology, transdisciplinary contexts

Zusammenfassung

Die *Space Archaeology* beschäftigt sich mit Facetten der Weltraumarchäologie. In der englischsprachigen Forschung existiert diese Strömung seit fast 20 Jahren als Teil der Contemporary Archaeology, im deutschsprachigen Raum hingegen ist sie als wissenschaftliches Betätigungsfeld bislang fast unbekannt. Das möchte dieser Beitrag ändern. Ziel ist es, etablierte Forschungsschwerpunkte der Weltraumarchäologie mit Ansätzen und Medien anderer Kulturwissenschaften, wie den Literatur- und Filmwissenschaften zu verknüpfen. Dafür schlage ich eine neue Taxonomie der Weltraumarchäologie vor: 1) die Erforschung zivilisatorischer Hinterlassenschaften im Zusammenhang mit Reisen ins Weltall sowie im All. Dieser Punkt lässt sich weiter differenzieren: 1a) die archäologische Erschließung von auf der Erde befindlichen (Infra-)Strukturen für Weltraumreisen, 1b) die archäologische Erschließung menschlicher Hinterlassenschaften im Weltraum oder auf anderen Himmelskörpern, 1c) die archäologische Erforschung vergangener extraterrestrischer Zivilisationen und Kulturen auf anderen Planeten. Als zweites relevantes Betätigungsfeld wird 2) *die archäologische Erforschung des Heute in der Zukunft* in den Blick genommen.

Schlagwörter

Space Archaeology, Weltraumarchäologie, Archäologie der Moderne, Archäologie der Zukunft, Archäologische Methodik in transdisziplinären Kontexten

Was ist Space Archaeology?

Space Archaeology beschäftigt sich nicht mit einer Archäologie des Raumes bzw. mit Forschungen unter raumspezifischen Kriterien, wie sie im Zuge des *Spatial Turn* Konjunktur haben. Der programmatische Titel von Roderick B. Salisbury und Dustin Keeler (2007) *Space – Archaeology's Final Frontier?*, einem Buch, in dem es um Raumanalysen geht, beschränkt sich dementsprechend im Untertitel auf einen *Intercontinental Approach*. Damit sind die äußersten Grenzen natürlich noch lange nicht erreicht; in der Frage *Is Space the Next Frontier for Archaeology?* (Smith 2018) zeigt sich die charmante Doppeldeutigkeit von *Space* voll entfaltet. Unter *Space Archaeology* versteht man eine Ausrichtung, die sich mit Facetten der Weltraumarchäologie beschäftigt. In der englischsprachigen Forschung ist diese Strömung klein und disparat, aber mit bekannten Vertreter*innen wie Peter J. Capelotti, Alice Gorman, Beth L. O'Leary oder Steve Wilson seit inzwischen fast 20 Jahren etabliert (Gorman 2020a: 10100–10101). Bereits 2003 gab es eine entsprechende *Session* auf dem fünften World Archaeological Congress (Gorman 2019: 41). Fast zeitgleich fand an der James Cook University in Queensland, Australien, eine Tagung zu „Space Heritage and the Potential for Exoarchaeology in the Solar System: National and International Perspectives" statt (Capelotti 2018: 176). 2009 bildete das über 1.000 Seiten starke *Handbook of Space Engineering, Archaeology, and Heritage* (Darrin und O'Leary 2009) den Ausgangspunkt zahlreicher englischsprachiger Publikationen zum Thema. Während im englischsprachigen Diskurs die Weltraumarchäologie selbstverständlicher Bestandteil der *Contemporary Archaeologies* ist (Gorman 2011 in Holtorf und Piccini 2011), kommt dieses Betätigungsfeld in den Leitlinien zu einer Archäologie der Moderne des Deutschen Verbands für Archäologie (DVA) nicht vor (Arndt u. a. 2018).[1]

Im deutschsprachigen Raum ist die Weltraumarchäologie bislang vor allem esoterisch oder verschwörungsideologisch aufgeladen. Eine fundierte wissenschaftliche Auseinandersetzung steht noch aus. Dieser Beitrag möchte dazu den Grundstock legen und den Diskurs eröffnen. Denn es lohnt sich, die Potenziale der *Space Archaeology* näher in den Blick zu nehmen und für einen differenzierten Forschungsgebrauch zu erschließen. Um dieses Ziel zu erreichen, nutzt der Beitrag eine doppelte Strategie: Zunächst werden Herleitungen der *Space Archaeology* referiert und Forschungsansätze verschiedener Weltraumarchäolog*innen vorgestellt. Dies erscheint für einen grundlegenden Einstieg in das im deutschsprachigen Raum bislang fast unbekannte Thema sinnvoll. Dabei soll der Beitrag jedoch nicht stehenbleiben. Ich schlage daher verschiedene Erweiterungen vor, die mit den bereits etablierten Ansätzen verknüpft werden. Unabhängig vom Sprachraum sollen auf diese Weise die zeitgenössischen Potenziale der *Space Archaeology* sichtbarer gemacht und besonders im Hinblick auf eine Anwendung archäologischer Methoden an transdisziplinären Schnittstellen eingeordnet werden. Ziel ist es, die bislang eher disparate *Space Archaeology* als zukunftsrelevante archäologische Strömung aufzuzeigen, indem gerade auch die (noch) fiktionalen Bereiche in eine praktische Auseinandersetzung mit einbezogen werden.

Taxonomie der *Space Archaeology*

Unter *Space Archaeology* lassen sich verschiedene Ansätze mit einem differenzierten Vokabular subsumieren. Wilson (2010) bot bereits eine eloquente Unterteilung an, für die er mehrere Konzeptbegriffe einführte bzw. verwendete. Er unterschied drei Bereiche, die verschiedene Überlappungen aufweisen: (1) Die *Aerospace Archaeology* umfasst die Archäologie der Flüge ins und der Erforschung des Weltalls, (2) die Exoarchäologie benennt menschliche Forschungen außerhalb des Planeten Erde, die er noch auf den Bereich der Fiktion limitiert sieht, und (3) die terrestrische Xenoarchäologie, die sich mit „Archaeology of aliens: excludes humans" beschäftigt. Diesen Bereich sieht er „full of crank theories like Erich von Daniken [sic]". Überschneidungsbereiche sind beispielsweise Absturzstellen außerirdischer UFOs auf der Erde (*Alien Aerospace Archaeology*) oder mögliche extraterrestrische Exoarchäologie im Zuge des irdischen SETI-Programms. Diese Unterteilungen sind in sich logisch und hilfreich zur Unterscheidung von Welt-Räumen, wie der Erde, dem Mond oder anderen Planeten und Akteur*innen, wie Menschen und Außerirdischen. Sie schließen bewusst nicht nur aktuelle, sondern auch zukünftige Möglichkeiten zur Erforschung sowohl menschengemachter Objekte im All als auch außerirdischer

1 Auch in den Beiträgen, die im Nachgang der DGUF-Tagung 2020 „Wollen und brauchen wir mehr Archäologie der Moderne?" in der Zeitschrift *Archäologische Informationen* 43 (2020) 2021 (DOI: 10.11588/ai.2020.1) veröffentlicht wurden, finden sich nur sporadische Hinweise auf die Weltraumarchäologie, beispielsweise bei Claudia Theune (2020: 23, 25), jedoch keine umfassende Auseinandersetzung als potenzielles Tätigkeitsfeld. Der Beitrag von Gorman in Holtorf und Piccini erschien bereits 2009, hier wird die zweite Auflage von 2011 zitiert.

materieller Hinterlassenschaften ein. Ihr Entwurf liegt jedoch schon mehr als eine Dekade zurück und einige Voraussetzungen, die damals noch vor allem der Vorstellung entsprangen und theoretische Überlegungen waren, können heute umfassende Wissenserschließungen sowie zeitgenössische Relevanz vorweisen. Auch kann die begriffliche Vielfalt eher verwirrend wirken und in einer deutschsprachigen Übersetzung schlimmstenfalls den bislang häufig verbreiteten, verschwörungsideologischen Eindruck von *Space Archaeology* schüren, dem hier entgegengewirkt werden soll. Daher schlage ich eine andere Unterteilung mit folgenden Schwerpunkten vor:

1) *Zivilisatorische Hinterlassenschaften im Zusammenhang mit Reisen ins Weltall sowie im All*: Diese reichen von Strukturen auf der Erde, die für Reisen ins Weltall errichtet wurden, wie Forschungszentren, Start- und Landestationen oder temporäre Ausbildungszentren, über Objekte in der Erdumlaufbahn und dem sogenanntem Weltraumschrott, bis hin zu Spuren auf dem Mond oder anderen Himmelskörpern. Für die Erforschung und den Erhalt dieser Hinterlassenschaften greift das Konzept des *Space Heritage* (O'Leary 2009b, 2020). Dieses Konzept lässt sich ausweiten auf die Verantwortung gegenüber extraterrestrischen nicht-menschlichen kulturellen Hinterlassenschaften. Deren Auffindung spielt sich bislang noch im Reich der Fiktion ab, ihre Relevanz deutet sich jedoch bereits in der Frage an, mit welchen Interessen und welcher Legitimation – wissenschaftlichen, wirtschaftlichen, kulturellen – der Mensch bereits schon jetzt z. B. in die Marsoberfläche eingreift und dort von Robotern Löcher in Gesteine bohren lässt (Abb. 1).

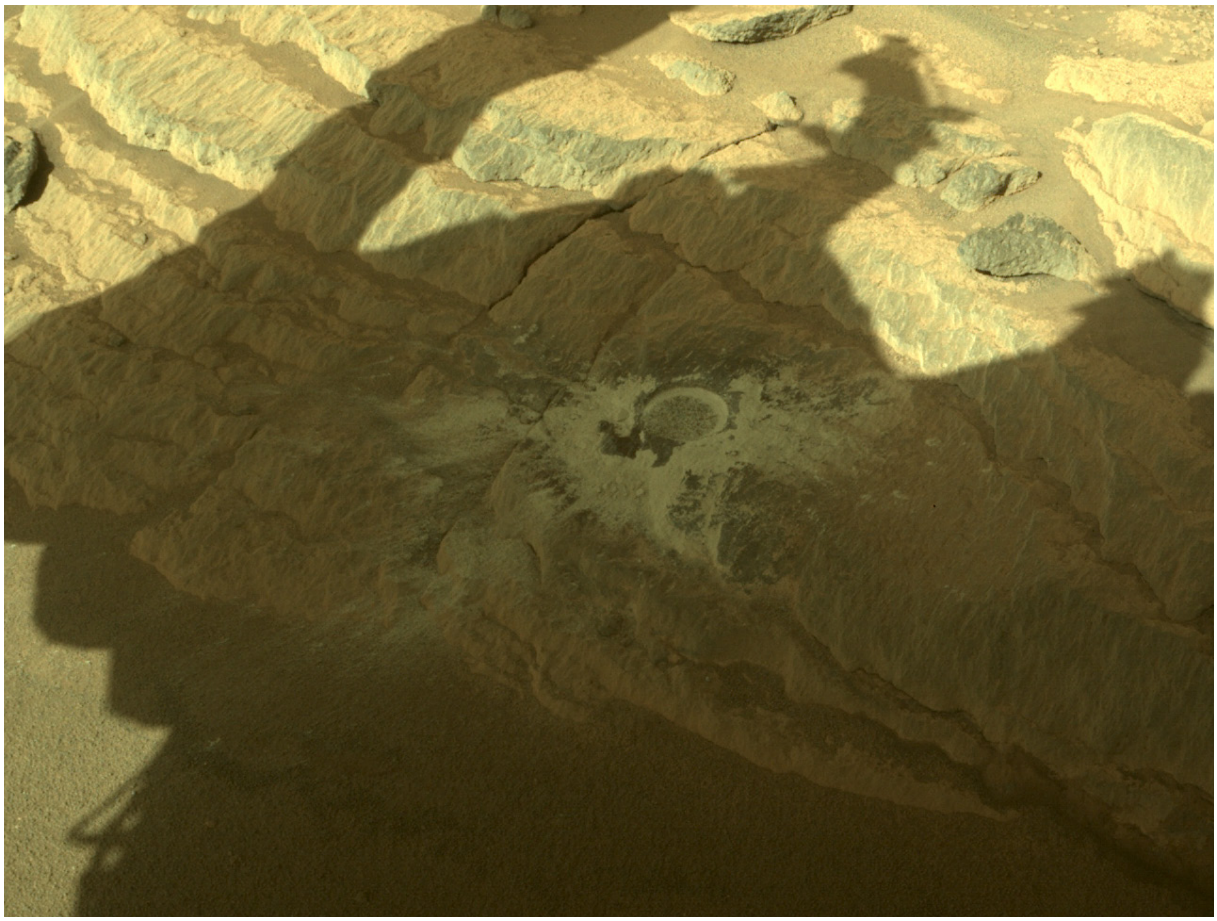

Abb. 1 Aufnahme des Mars Rovers *Perseverance* von einer durch ihn durchgeführten Probebohrung im Marsgestein. Das Bild wurde am 7. November 2021 (Sol 255, local mean solar time of 15:57:28) vom NASA Mars Rover *Perseverance* mithilfe seiner onboard Front Right Hazard Avoidance Camera (Hazcam) erstellt. Image Credit: NASA/JPL-Caltech.

Dieser erste Punkt lässt sich wie folgt weiter differenzieren:

1a) *Die archäologische Erschließung von auf der Erde befindlichen (Infra-)Strukturen für Weltraumreisen* ist möglich und wird bereits vereinzelt durchgeführt. Sie gehört zum Feld einer Archäologie der Moderne.

1b) *Die archäologische Erschließung menschlicher Hinterlassenschaften im Weltraum oder auf anderen Himmelskörpern* ist grundsätzlich möglich, wird aber zurzeit noch nicht durchgeführt, auch wenn es schon Ansätze und Pläne dazu gibt. Im Hinblick auf den zunehmenden *Space Tourism* und die stetig wachsende Masse an Weltraumschrott sind praktische Erschließungen materieller Hinterlassenschaften (zur Definition s. Wodtke 2018: 54–58) sowie archäologische Projekte z. B. auf dem Mond denkbar und werden angestrebt.

1c) *Die archäologische Erforschung vergangener extraterrestrischer Zivilisationen und Kulturen auf anderen Planeten* findet bislang ausschließlich in Fiktionen statt. Reale Untersuchungen widmen sich bislang Spuren zellularen Lebens z. B. durch den Nachweis von Wasser. Eine Betrachtung des medialen Materials (z. B. Texte, Filme und Serien oder Spiele) unter literatur- und medienwissenschaftlichen Fragestellungen mit expliziter Berücksichtigung archäologischer Erschließungsmethoden und Fragen der *Material Culture Studies* verspricht hier Potenziale transdisziplinären Arbeitens und Forschens mit den Literatur-, Theater, Film- und Medienwissenschaften, der Kunstgeschichte, der Philosophie oder der (Kultur-)Anthropologie, wie sie im Zuge der *Cultural Turns* bereits teils etabliert sind, teils jedoch immer noch lediglich als kulturwissenschaftliche Absichtsbekundungen existieren (Wodtke 2013). Zu dieser lohnenswerten Vielstimmigkeit im Hinblick auf den Forschungsgegenstand *Space* ist ein archäologischer Beitrag relevant.

Die in diesem Beitrag herangezogenen Erzählungen stammen aus dem Bereich der Science-Fiction. Die genannten Beispiele – Filme und Serien, Texte, Computerspiele – wurden dabei im Hinblick auf ihr Potenzial ausgewählt, die in diesem Beitrag aufgezeigten Themen zu beleuchten. Nicht alle Autor*innen und Werke, die es verdienten, können hier berücksichtigt werden. Die Leerstellen verweisen darauf, wie ergiebig die Materialfülle ist, und regen an, sich diesen Facetten des Betätigungsfelds *Space Archaeology* weiter zu widmen. Alle hier verwendeten Textausgaben sind nicht nach literaturwissenschaftlichen, sondern nach Kriterien der individuellen Verfügbarkeit ausgewählt worden.

Science-Fiction ist eine für Fragen der Weltraumarchäologie in zweifacher Hinsicht interessante Gattung: Zum einen lohnt ein Abgleich, wie frühere Zukunftsentwürfe dazu beigetragen haben, wissenschaftliche und auch ästhetische Umsetzungen zu gestalten. In den ausgewählten Beispielen werden daher speziell Anwendungsbereiche archäologischer Methodik in den Blick genommen. Zum anderen zeigen Vorstellungen zukünftiger technischer Möglichkeiten Potenziale für die archäologische Forschungen auf. Wie könnten sich beispielsweise bildgebende Verfahren weiterentwickeln? Wie lässt sich eine Dokumentation von Kulturgut in Schwerelosigkeit durchführen? Aus diesem Grund ist hier ein weiterer Punkt von Interesse:

2) *Die archäologische Erforschung des Heute in der Zukunft*: Dieser Themenbereich entfernt sich zwar von der Weltraumarchäologie und begibt sich mit seinen Möglichkeiten an der Schnittstelle von Fiktion und dem Potenzial archäologischer Methodik in das Feld einer *Archäologie der Zukunft*. Dennoch ist dieses Feld hier berücksichtigt, da es Denk- und Handlungsräume eröffnet, wie wir uns die eigenen, weltlichen Utopien – und in Bezug auf globale Krisen wie den Klimawandel auch Dystopien – vorstellen, uns ihnen stellen und welchen Beitrag archäologische Herangehensweisen dazu leisten können. Zudem setzt sie dem populären irdischen Verständnis einer linearen Zeitlichkeit transtemporale Verständnis- und Erschließungsoptionen entgegen, wie sie besonders im Hinblick auf *Long-term*-Weltraumreisen bislang nur theoretisch reflektiert werden. Da es bei *Culture Heritage* darum geht, vergangene Lebenswelten durch Objekte in einen gegenwärtigen Verständnishorizont und zeitgenössischen intellektuellen Gebrauch zu überführen, um als Gesellschaft zukunftsfähig zu bleiben, trifft dies auf die (fiktionale) Annahme einer Erschließung heutiger Kontexte als potenzielle archäologische Stätten der Zukunft in besonderem Maße zu.

Das spannende Potenzial einer *Archäologie der Zukunft* kann im Rahmen dieses Beitrags mit dem Schwerpunkt auf Weltraumarchäologie nur angerissen werden. Seine aktuelle Relevanz – nicht nur für das hier betrachtete Forschungsfeld – wird beispielsweise bei einem programmatischen Titel wie von Shawn Malley (2018) *Excavating the Future* sichtbar, der mit diesem Link den Blick auf zeitgenössische Themen- und Problemfelder lenken möchte. Während sich die hiesigen Überlegungen mit Perspektiven auf das Heute aus einer (fiktiven) Zukunft beschäftigen, geht es bei einer Archäologie der Zukunft um ein zeitgenössisches wie pluralistisches Zukunft-Machen (Harrison 2020), ein Ansatz, wie er in der Kulturanthropologie bereits etabliert ist (Chakkalakal und Ren 2022). Archäologie kommt dabei mehrfache Bedeutung zu: So geht es bei der Erschließung von Vergangenheit und speziell materieller Kultur früherer Gesellschaften immer darum, diese aus einem Heute heraus für die Zukunft zu bewahren sowie ihr aktuelles Verständnis für die nächsten Generationen und eine Zukunftsgestaltung nutzbar zu machen und interpretationsoffen wie dialogisch zu vermitteln. Archäologische Methodiken

wie beispielsweise das Ausgraben und Freilegen oder das systematische Sammeln, Dokumentieren, Klassifizieren und Archivieren sind dabei maßgebliche Kulturtechniken, die durch hochtechnisierte Prozesse wie digitale Vermessungen oder 3D-Laserscanning die Erschließung an sich hybrid, das Ergebnis bisweilen sogar zu einer Cyborg werden lassen (Haraway 1995). In diesem Sinne kommt beispielsweise einer archäologischen Ausgrabung eine ähnliche zukunftsaktive Bedeutung zu, wie einer Baustelle zur Errichtung eines Gebäudes, welches stadtbildprägend werden kann und auch von späteren Generationen genutzt wird. Dieser Anspruch einer Archäologie der Zukunft geht über den hier verhandelten Punkt 2), einer Ausgrabung des Heute, hinaus und bietet weitere herausfordernde Anknüpfungspunkte (vgl. dazu die Beiträge im *Journal of Contemporary Archaeology* 6(1), 2019: Special Issue: Futurity, Time, and Archaeology).

Praxisfeld 1a): Archäologische Erschließung von auf der Erde befindlichen (Infra-)Strukturen für Weltraumreisen

Alle vom Menschen im All genutzten Objekte haben bislang ihren Ursprung auf der Erde (Gorman 2019: 80).[2] Es gibt Produktionsstätten, Gelände für Raketenstarts und -landungen, Ausbildungscamps für Astronaut*innen sowie zahlreiche weitere Stätten und (Infra-)Strukturen für Satelliten und Weltraumreisen (Westwood u. a. 2017). In ihrem archäologischen Erschließungspotenzial unterscheiden sie sich nicht von anderen neuzeitarchäologischen Stätten bzw. solcher der *Contemporary Archaeologies* (Holtorf und Piccini 2011) bzw. der *Archaeology of the Contemporary Past* (Gorman 2020a: 10100), auch wenn sie im deutschsprachigen Raum bislang nicht in diesem Feld mitgedacht werden (Arndt u. a. 2018). Als Vergleiche im Hinblick auf die temporäre, dann aber sehr intensive wie stark strukturierte und zielorientierte Nutzung z.B. von Anlagen für Raketenstarts bieten sich Beispiele der sogenannten Lagerarchäologie an. Diese reichen von der Erforschung von Unterkünften für Kriegsgefangene (Dressler u. a. 2017; Misterek und Stern 2020) über aktivistische Tätigkeiten (Beck u. a. 2011) bis hin zu Forschungsstationen (Pearson 2011; Westwood u. a. 2017: 138–155; Capelotti 2018). Eines der bislang wenigen Beispiele für ein archäologisches Projekt an einer *Space Site* startete 2009 im Orroral Valley, Australien (Gorman 2019: 102–108). Dort ergab sich ein Fokus auf die Fundgattung „Kabelbinder“, deren Analyse, Historie und *Agency* sich im Hinblick auf menschliche Verhaltensweisen ebenso gewinnbringend wie jede andere archäologische Fundgattung interpretieren lassen (Gorman 2019: 108–113). Capelotti (2018) wählt einen anderen Zugang. Anstatt einen spezifischen, für Weltraumflüge genutzten Ort zu erforschen, kategorisiert er in seiner Arbeit unter dem Titel *Adventures in Archaeology* verschiedene Schiffs- und Flugzeugtypen. Neben Segelschiffen und Flößen widmet er der Luftfahrt inklusive Luftschiffe und der Raumfahrt jeweils eigene Kapitel. Die Klammer bildet dabei „the archaeology of remote shorelines, and the intersections of sea, air, and space“ (Capelotti 2018: 146).

Praxisfeld 1b): Archäologische Erschließung menschlicher Hinterlassenschaften im Weltraum oder auf anderen Himmelskörpern

Im All

Seit über 60 Jahren befördern Menschen menschengemachte Objekte ins Weltall, die nicht dafür geschaffen und gedacht sind, jemals wieder auf die Erde zurückzukommen (Abb. 2):

2 Zu im Weltall hergestellten Objekten siehe Abschnitt *Made in Space*. Für Gorman (2019: 79–93) sind auch auf der Erde genutzte Gegenstände, die auf satellitengestützter Technologie basieren, Untersuchungsgegenstände der *Space Archaeology* ebenso wie vom Weltraumreisen inspirierte Populärkultur. Als weiteres Betätigungsfeld sind audiovisuelle UFO-Zeugnisse denkbar, wie sie vom Pentagon im Juni 2021 freigegeben wurden, und die sich mit bild(er)wissenschaftlichen Ansätzen und Methoden untersuchen ließen. Das Pentagon betonte in diesem Zusammenhang, dass es bislang keinerlei Belege über extraterrestrische Ursprünge der bekannten UFO-Sichtungen gibt und sie keinen Beweis für außerirdisches Leben darstellen. Auch die Aufnahmen des James-Webb-Teleskops eröffnen völlig neue Interpretationszugänge zum Weltall auf der Basis bildgebender Verfahren.

„Here's what's in orbit around Earth right now: satellites that work, satellite that don't work, the rocket stages that delivered them, bolts, canisters, fairings, exploded fragments, flecks of paint, shrapnel, tools, fuel, and, possibly, a remnant of organic waste from human spaceflight missions […]. Space junk ranges from whole spacecraft that weight thousands of kilograms, to microscopic particles from eroded spacecraft surfaces." (Gorman 2019: 120)

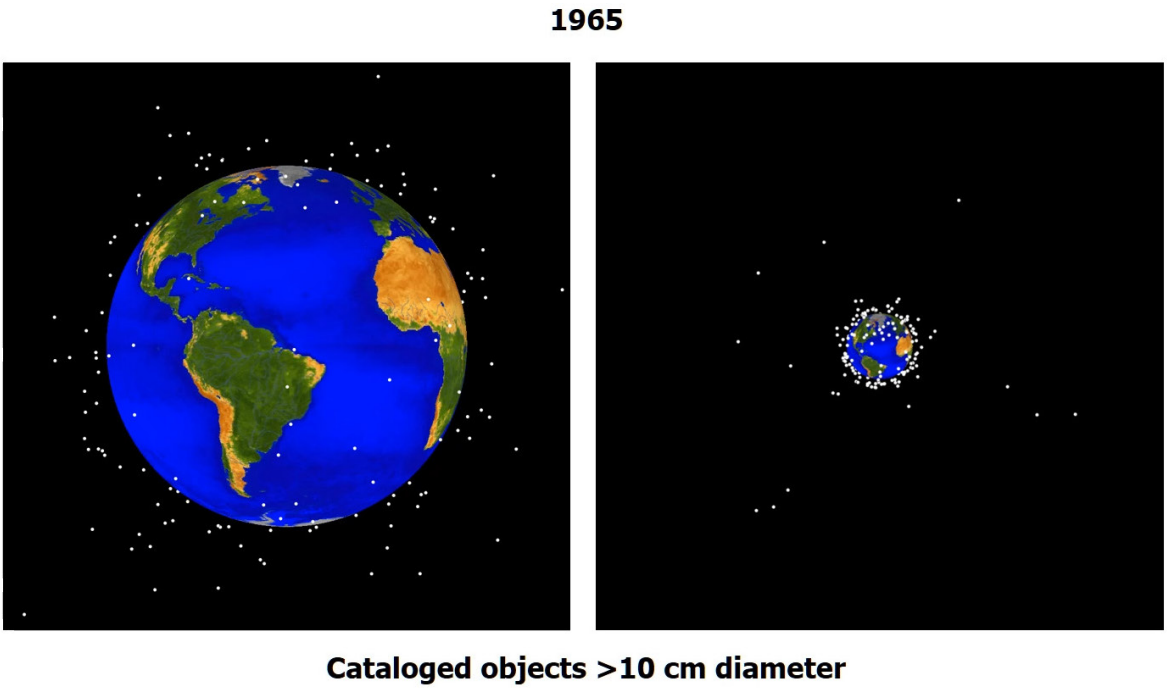

Abb. 2 Trümmerteile im Orbit mit einer Größe von mehr als 10 cm in den Jahren 1965 und 2019. Image Credit: NASA.

Mit diesen Objekten geschehen die verschiedensten Dinge. Sie verbleiben in einer Umlaufbahn, verglühen in der Atmosphäre, driften weiter in den Raum oder werden von anderen Objekten getroffen und in tausende Fragmente zerschlagen. Die Gefahr durch Weltraumschrott für (intakte) Satelliten oder die bemannte Raumfahrt als eine dystopische Kettenreaktion der Trümmervermehrung wurde als so genannter Kessler-Effekt (Kessler und Cour-Palais 1978; vgl. auch Gorman 2020b) bekannt und beispielsweise im Hollywoodfilm GRAVITY (Alfonso Cuarón, USA 2013) auf dramatische Weise visualisiert – in diesem Fall nur für zwei Figuren, die sich zufällig im Orbit befanden. Die These geht jedoch davon aus, dass der Effekt in seiner gesamten Dimension zukünftig die Raumfahrt gänzlich unmöglich machen wird, da sich ein so dichter Gürtel aus Weltraumschrott um den Planeten legt, dass er nicht mehr gefahrlos von startenden und landenden Raketen durchdrungen werden kann (einen inzwischen veralteten Überblick gibt Capelotti 2010). Um diesem Problem zu begegnen, hat die NASA das Orbital Debris Program Office (ODPO) aufgelegt. Es gibt an, dass sich etwa eine halbe Million Objekte von „Murmelgröße“ im All befinden und schätzt die Zahl von Fragmenten, die 1 mm oder kleiner sind, auf 100 Millionen. Ebenso wie die Raumfahrt und damit die Problemverursachung sind inzwischen auch diesbezügliche Lösungsvorschläge privatisiert. So bietet beispielsweise das von Absolvent*innen der TU Braunschweig gegründete Startup OKAPI:Orbits „Space Situational Awareness (SSA) for automated collision avoidance“, also die Verhinderung von Kollisionen von Satelliten mit Weltraumschrott als Dienstleitung an. Dieses Thema taugte auch jüngst zur Demonstration nationalstaatlichen Anspruchsdenkens sowie des Übergreifens irdischer Machtkonflikte ins All: Bereits kurz nach ihrer Ankunft im November 2021 musste die neue Crew der ISS, zu der auch der deutsche Astronaut Matthias Maurer gehörte, einem Evakuierungsplan entsprechend die Raumstation verlassen und in die angedockten Shuttles steigen, da eine Kollisionsgefahr mit dem ausgemusterten Satelliten Zelina-D bestand. Die USA benannten einen russischen Raketentest als Grund für den Vorfall. Nur wenige Wochen später, im Januar 2022, reichte China bei der UN Beschwerde gegen das private Raumfahrtunternehmen SpaceX ein, da seine eigene Raumstation aufgrund von SpaceX-Satelliten mehrmals Ausweichmanöver durchführen musste.

Als archäologische Methode für die Erschließung von Objekten in der Erdumlaufbahn wäre ein Survey denkbar. Capelotti (2018: 189–190) spricht von einem galaktischen archäologischen Survey und denkt dabei auch an die „dunklen Regionen“ jenseits unseres Sonnensystems. Dafür müssten wegen der Masse an Fragmenten zunächst genaue Kriterien festgehalten werden, welche Objekte erfasst werden sollen. Die sicher größte Herausforderung der Kartierung dieser als archäologische Stätten definierbaren Cluster ist die Vierdimensionalität. Da die Objekte sich in einer Umlauf- bzw. Flugbahn befinden, wäre eine statische Darstellung nicht mehr als eine Auflistung ihrer Existenz, die zum Zeitpunkt der Veröffentlichung bereits einen vergangenen Zustand abbildete. Ist für archäologische Fundplätze auf der Erde nach wie vor eine auf einem Papier oder Bildschirm darstellbare Kartierung üblich, die erst seit kurzem dreidimensionale Visualisierungen erprobt, so müsste ein entsprechendes Modell für Stätten im All die Bewegung sowie die Verfolgung und Berechnung der Mobilität in Raum und Zeit mit einbeziehen. Auch Verfallsdynamiken könnten Bestandteil dieser Kartierungen sein – Aspekte, die grundsätzlich auch auf irdische Fundkomplexe und Strukturen zuträfen, im Vergleich jedoch stärker begrenzt sind. Dennoch könnte ein entsprechendes (Echtzeit-?)Verfahren durchaus ein Vorbild für neue Wege der Kartierungen und Visualisierungen in allen archäologischen Tätigkeitsfeldern sein.

Auf dem Mond

Seit 1959 gab es mehr als 30 von Menschen initiierte Mondlandungen: „the Moon has become a cultural landscape strewn with archaeological sites” (Gorman 2019: 160; vgl. auch Capelotti 2009, 2010, 2018: 181–182; O’Leary 2020). Dazu zählen bekannte Rover- oder Astronautenlandungen ebenso wie verschollene Mondlandeflugzeuge oder Mondfahrzeuge. Diese erzählen nicht nur eine Technik-, sondern auch eine Repräsentationsgeschichte irdischer Nationalstaatlichkeit der vergangenen 60 Jahre.

> „Dass der Mond noch nicht mit Zigarettenstummeln und Coca-Cola-Dosen zugemüllt ist – dann würde auch der letzte Verschwörungstheoretiker glauben, dass der Mensch dort war – liegt für Blumenberg nicht an der Zurückhaltung der Astronauten, sondern an einer gewissen Vergnügungs- und Genussfeindlichkeit der Mond-Natur.“ (Grotkopp 2021: 134 mit Bezug auf Blumenberg 1997: 427)

Detaillierte wie langfristige postdepositionale oder taphonomische Prozesse, wie das Verhalten einer leeren Getränkedose auf dem Mond, sind bislang nicht hinlänglich erforscht. Hier spielen Faktoren wie Gravitation,

Strahlungen, extreme Hitze- und Kälteeinflüsse, Kollisionen oder Einschläge eine Rolle, die teilweise bislang nur theoretisch berechenbar oder noch gänzlich unbekannt sind und sich von denen auf der Erde maßgeblich atmosphärisch unterscheiden. Fest steht aber schon heute, dass sich menschliche Hinterlassenschaften im Orbit der Erde oder auf anderen Planeten oder Kometen befinden, die irdische archäologische Stätten um Jahrmillionen überdauern könnten (Smith 2018; Gorman 2019: 265–275). Als eine Art erstes archäologisches Unterfangen wird die Bergung einer Kamera und anderer Komponenten der Surveyor 3, die sich seit 1967 auf dem Mond befanden, durch Astronauten der Apollo-12-Mission von 1969 gewertet (Capelotti 2010; 2018: 183; Smith 2018; O'Leary 2020: 10106; Abb. 3). Auf der Erde wurden die Objekte analysiert, was erste Rückschlüsse über Staubströmungen zuließ, die auf Mondlandungen und Mikrometeoriteneinschläge zurückgeführt werden (NASA 1972). Zwar geschah die Bergung der zwei Jahre auf dem Mond befindlichen, menschengemachten Objekte, abgesehen vom Anfertigen einiger Fotografien, nach den Maßstäben eines archäologischen Projektes quasi undokumentiert und ist daher eher mit einer Form der Bergung im Stil früher positivistischer Ansätze des 19. Jahrhunderts, denn einer dezidierten Kampagne vergleichbar. Der Mangel an entsprechender Dokumentation zeigt wie nötig solche Standards und das mit diesen Praktiken verbundene Wissen sind. Die an diesen geborgenen und zurück zur Erde transportierten Objekten generierten Beobachtungen und Erkenntnisse über Lagerungs- und Alterungsprozesse, Materialverhalten usw. bieten bei der Etablierung entsprechender Methoden und Leitlinien große Unterstützung.

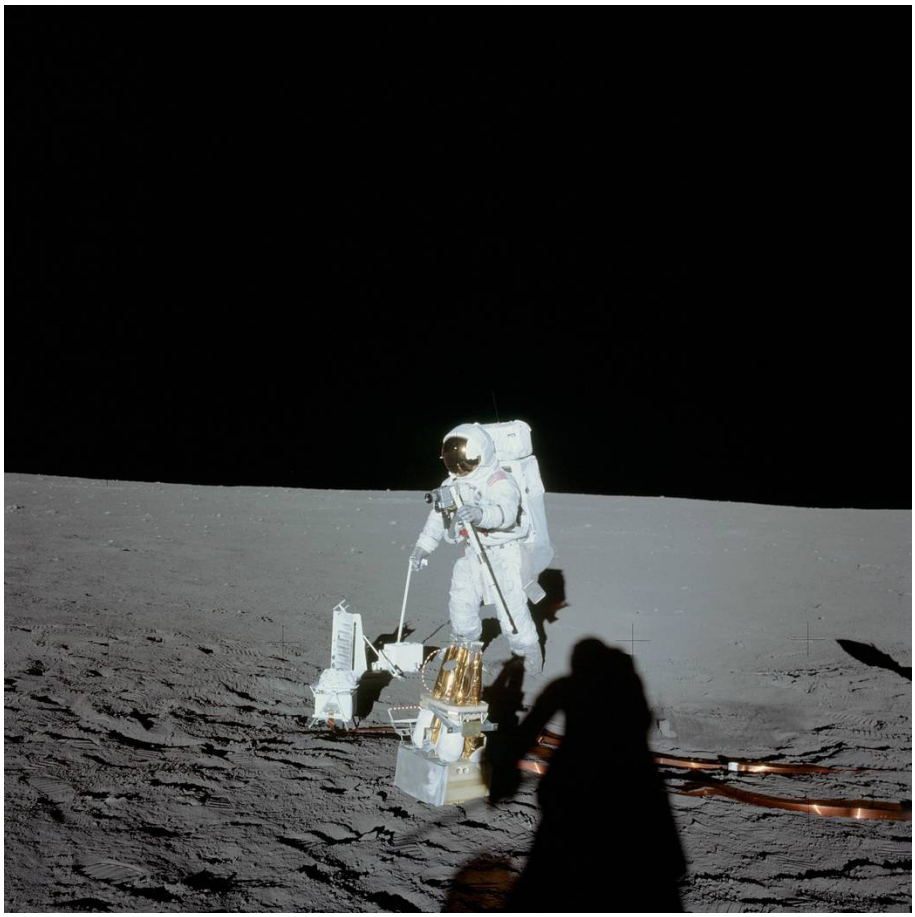

Abb. 3 Astronaut Alan L. Bean, Lunar Module Pilot, setzt während des ersten Apollo 12-Spaziergangs auf dem Mond Instrumente des Apollo Lunar Surface Experiments Package ein. Auffallend sind die zahlreichen Fußabdrücke. Das Foto wurde von Astronaut Commander Charles „Pete" Conrad Jr. aufgenommen. Image Credit: NASA.

Bemerkenswert ist, dass der knapp 300 Seiten starke, technische und stark formalisierte Bericht über die vom Mond zur Erde zurückgebrachten Objekte mit einem von der Surveyor 3 aufgenommenen Foto auf dem Cover veröffentlicht wurde (NASA 1972; Abb. 4). Diese Form der Illustration findet sich häufig auch bei Grabungspublikationen, die für ihren Inhalt mit Katalogen, Tabellen und stark deskriptiven Textelementen bewusst diesen Einstieg eines idealisierenden Augenblicks in die Lektüre wählen. Die prominente Darstellung des einen

spannenden Momentes, festgehalten in der Fotografie, schreibt das Narrativ des großen Abenteuers Raumfahrt fort und blendet bewusst alle anderen Strapazen, Tätigkeiten und Hintergründe aus, die für die Herbeiführung dieses einen besonderen Moments nötig waren. Überhaupt sind Fotografien bislang das häufigste Dokumentationsmaterial, anhand dessen Schlüsse über als archäologisch definierbare Situationen im All und besonders auf dem Mond gezogen werden (vgl. auch Smith 2018).

Abb. 4 Cover des Berichtes *Analysis of Surveyor 3 Material and Photographs Returned by Apollo 12* (Nasa 1972).

Wie bei der Luftbildarchäologie sind sie wichtige Indizien, reichen jedoch allein nicht aus: Etablierte archäologische Erschließungsmethoden – Surveys, Ausgrabungen, (Be-)Fundanalyse oder Modellierungen – und weitere Dokumentationsverfahren wie 3D-Scans, Zeichnungen oder Beschreibungen sind im Weltall genauso anwendbar wie auf der Erde – zumindest theoretisch. Das dafür noch geltende Dilemma bringt die Pionierin der Weltraumarchäologie Alice Gorman folgendermaßen auf den Punkt: „How do you study things you can't visit, or touch?" (Gorman 2019: 80). Die Arbeit im Weltall wird neue bzw. die Erweiterung etablierter archäologischer Methodiken erfordern. Bisweilen wird die Weltraumarchäologie mit der Unterwasserarchäologie verglichen, bei der ebenfalls Schutzanzüge und Sauerstoffgeräte erforderlich oder besondere Umstände der Dokumentation, wie beim Zeichnen und Vermessen, gegeben sind (Westwood u. a. 2017: 138–155). Auf dem Mond oder im All wird jedoch eine völlig neue Art der Feldarbeit nötig sein. Grundständige archäologische Tätigkeiten werden nicht mehr ausschließlich von Menschen durchgeführt werden (können). Die Suche nach Spuren und Rückständen von Wasser beispielsweise auf dem Mars übernehmen automatisierte Fahrzeuge mit dem vom Menschen initiierten Interesse an vergangenen Lebensformen (Abb. 5; vgl. auch Abb. 1). Erste Bestrebungen wenden hingegen noch traditionelle archäologische Methoden und Techniken an: detailliertes Listen, Beschreiben und Analysieren des vorhandenen audiovisuellen Materials. So hat O'Leary im Rahmen des von der NASA ins Leben gerufenen Lunar Legacy Projects gemeinsam mit weiteren Wissenschaftler*innen ein archäologisches Inventar des Mondlandeplatzes der Apollo 11 von 1969 erstellt (O'Leary 2009a, 2009b; NASA 2011; https://spacegrant.nmsu.edu/lunarlegacies, Stand: 1.8.2022 ; Abb. 6). Unabhängig von allen theoretisch denkbaren archäologischen Forschungen der auf dem Mond befindlichen materiellen Hinterlassenschaften gibt es dort zudem schwierige Besitzverhältnisse, unklare Zuständigkeiten und keine Gesetzesgrundlagen für einen Kulturgüterschutz (Westwood u. a. 2017: 156–174; O'Leary 2020). So beanspruchen zwar die USA alle im Zuge der Apollomissionen auf den Mond

transportierten Objekte für sich, so auch die von O'Leary gelisteten des Landeplatzes der Apollo 11; der Mondboden, auf und in dem sie sich befinden, gehört jedoch niemandem. Dieser Umstand wird besonders bei Hinterlassenschaften wie beispielsweise dem ikonischen Fußabdruck von Neil Armstrong virulent (Spennemann 2004). Wie kann verhindert werden, dass in einer nahen Zukunft Weltraumtourist*innen ihren eigenen Fußabdruck daneben oder gar gedankenlos darauf platzieren und dieses menschliche Kulturgut damit für immer zerstört wird? Die Forschungsbestrebungen der *Space Archaeology* zu institutionalisieren und vor allem auch Rechtsgrundlagen zum Umgang mit extraterrestrischen archäologischen Stätten und Space Heritage zu schaffen, ist im Zeitalter der privaten Raumfahrt von zunehmender Bedeutung: „Otherwise we must be prepared to see pieces of Apollo 11 listed for sale on eBay someday" (Capelotti 2018, 177). Oder, um es mit den Zeilen eines Songtextes von Chumbawamba zu sagen: „That stuff inside your houses and that stuff behind your eyes / Well, it all ends up as stuff that you can buy / On eBay, from Babylon back to Babylon / On eBay, from Babylon back to Babylon" („On eBay", 2004). 2017 wurde daher zur Pflege und Erhaltung menschlicher Geschichte und Hinterlassenschaften im *Outer Space* die NGO *For All Moonkind* gegründet.

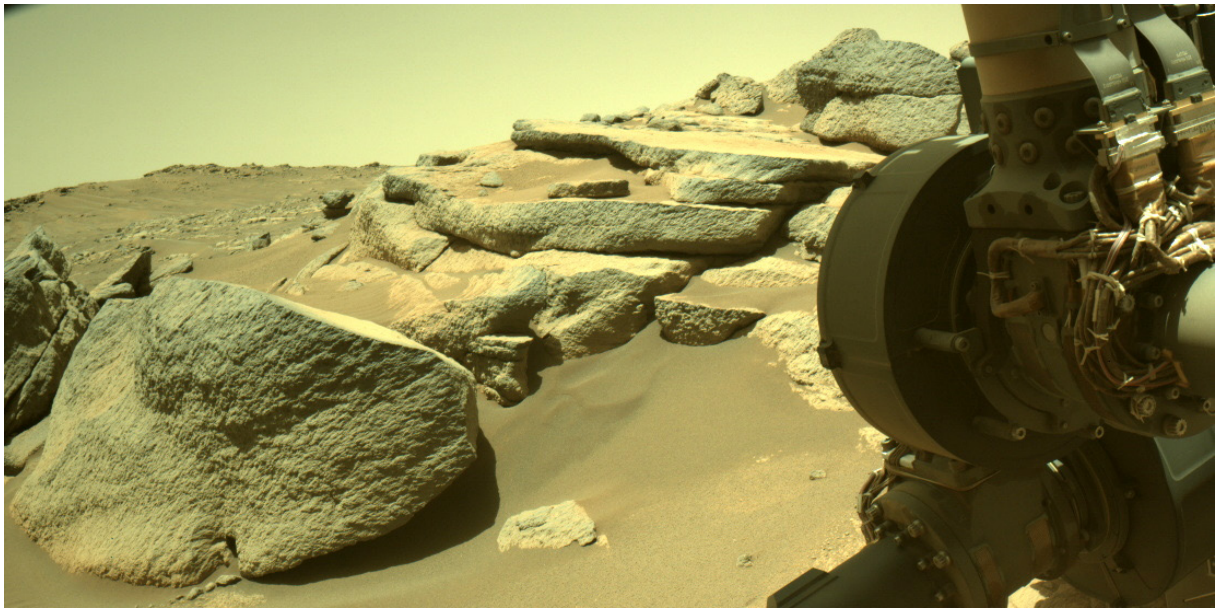

Abb. 5 Aufnahme des Mars Rovers *Perseverance*. Das Bild wurde am 4. November 2021 (Sol 252, local mean solar time of 12:14:23) vom NASA Mars Rover *Perseverance* mithilfe seiner onboard Front Left Hazard Avoidance Camera A erstellt. Image Credit: NASA/JPL-Caltech.

Lisa Westwood u. a. (2017) nutzen den Konzeptbegriff der *Apollo Culture* (vgl. auch Capelotti 2009), um in Anlehnung an archäologische Kulturkreisbildung einen Sammelbegriff für alle auf dem Mond befindlichen menschlichen Hinterlassenschaften zu etablieren – ein Begriff, der nicht minder kolonialistisch anmutet, als würde man *Sputnik Culture* vorschlagen. Es entsteht der Eindruck, das *Space Race* des Kalten Krieges, das seinen Höhepunkt mit dem ‚Pflanzen' der amerikanischen Flagge auf dem Mond erreichte (Gorman 2019: 217–220), schreibe sich in seiner eigenen Erforschung im Rahmen der Weltraumarchäologie fort (Rositzka 2021). Das zeigt sich erst jüngst wieder als im Juli 2022 Russland als eine der indirekten Konsequenzen seines Angriffskrieges auf die Ukraine den Rückzug von der International Space Station verkündet. So wie die Geschichte der Raumfahrt auch eine Geschichte des Wettrüstens im Kalten Krieg ist (Sturdevant und Orndorff 2009), so ist die der menschlichen Präsenz im All, wie auf der MIR und der ISS, oder Pläne, Siedlungen auf anderen Planeten zu gründen, auch eine Geschichte des Kolonialismus. Gängige Formulierungen wie ‚die Eroberung des Weltraums', das ‚Besiegen widriger Umstände' oder ‚die Gründung außerweltlicher Kolonien' bedienen sich eines lange tradierten, hochproblematischen kolonialistischen Sprachgebrauchs, der von einer selbstverständlichen Herrschaft des Menschen über alles, was er kennt oder noch kennenlernen könnte, ausgeht und die Unterwerfung von allem und allen, das oder die ihm dabei begegnen oder vermeintlich im Weg stehen, legitimiert. Lars Schmeink (2021) führt dies beispielhaft wie eindrucksvoll an der Serie The Expanse (Mark Fergus/Hawk Ostby, USA 2015–2022) aus. Daher bedarf es auch konzeptioneller Ansätze der *Postcolonial Studies*, damit sich die Forschung der mit dieser Präsenz einhergehenden Machtverhältnisse sowie des Habitus und der Denkstrukturen, die wir unreflektiert von der Erde exportieren, gewahr wird (Gorman 2011).

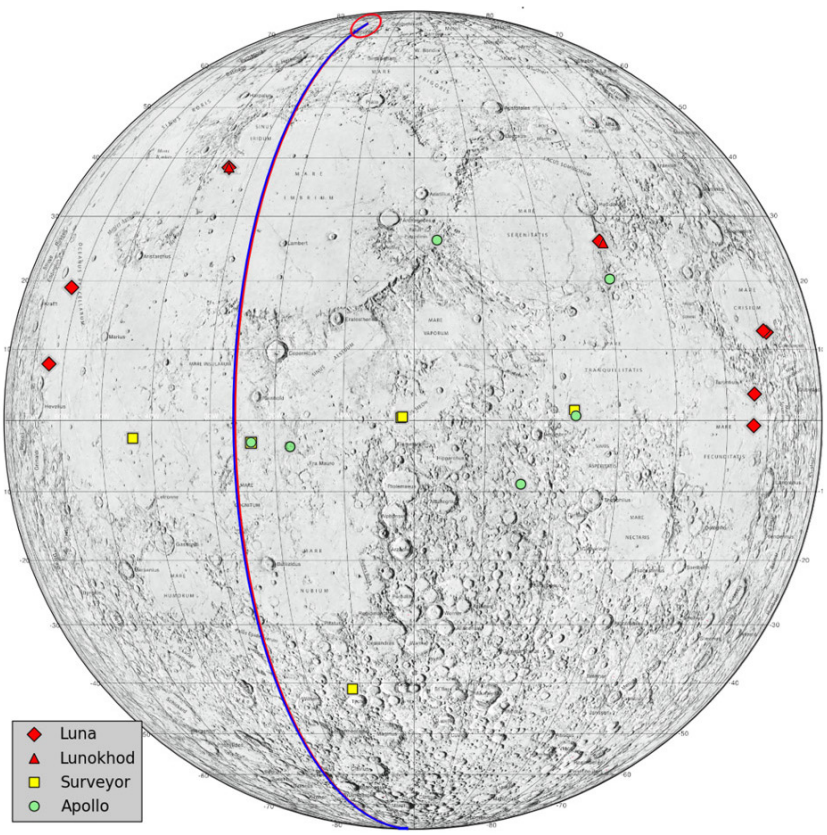

Abb. 6 Orte amerikanischer (Apollo und Surveyor) und sowjetischer (Luna und Lunakhod) Mondlandungen, die die NASA als Luna Heritage Sites in Betracht zieht. Image Credit: NASA.

Made in Space

Sputnik 1 (1957) und Vanguard 1 (1958) begründeten als erste Satelliten die Ära menschengemachter Objekte im All oder auch des Weltraumschrotts (eine ausführliche historische Darstellung geben Westwood u. a. 2017: 13–24; zu den Unternehmungen bis zum Launch von Sputnik 1: Osiander 2009). Nachdem der Mensch in einem ersten Schritt seit den späten 1950er Jahren vor allem Telekommunikationssatelliten ins All brachte und seine eigene Präsenz die Ausnahme blieb, scheint nun eine neue Phase der Weltraumnutzung anzubrechen, die private Unternehmungen und Tourismus mit einschließt (Gorman 2020a: 10102–10103). Das staatliche Weltraumrennen im Kalten Krieg, bei dem es um die Demonstration technischer Überlegenheit und einen Stellvertreterkrieg ging, der über die planetarische Grenze hinausreichte und die erreichbaren Orte im Weltall mit einbezog, wird in der dritten Dekade des 21. Jahrhunderts vom privaten Wettstreit einiger Milliardäre abgelöst. Damit hat der Drang und die Suche nach immer neueren, spektakuläreren und einzigartigeren Erlebniswerten (Holtorf 2007: 3–6) ihren derzeitigen Höhepunkt erreicht. Mit den Höher-Schneller-Weiter-Ansprüchen der (privaten) Raumfahrtunternehmen werden auch Fragen zu sogenannten *Long-term*-Weltraumexpeditionen virulent. Wie können sich Weltraumfahrende auf monate- oder gar jahrelangen Reisen ernähren? Wie sich materiell versorgen und beispielsweise mit Materialverschleiß umgehen? Oder archäologisch gesprochen: Wie lassen sich Objekte möglichst lange nutzen, wie lässt sich Müll produktiv und energiesparend mit begrenzten Mittel recyceln?

Im Jahr 2014 wurde auf der ISS mithilfe eines 3D-Druckers das erste Objekt im All angefertigt (Hubscher 2014; Abb. 7). Es handelte sich um eine Blende für den Druckkopf des 3D-Druckers mit dem erhabenen Schriftzug MADE IN SPACE NASA. Neben seiner praktischen Funktion als Verkleidungselement, die dem Objekt nicht unbedingt sofort anzusehen ist, liegt der Fokus vorrangig darauf, es mit der selbstreferenziellen Aussage seiner Herstellungsumstände und der ausführenden Institution auszustatten. Sein Nutzen besteht somit auch im sichtbaren Nachweis seiner bloßen Existenz. Die Blende mit dem Schriftzug ist ein Repräsentant des (theoretischen)

Potenzials, bei zukünftigen *Long-term*-Weltraumexpeditionen beispielsweise Ersatzteile während der Reise selbst herstellen zu können. Umfassende Materialanalysen finden dabei nach wie vor auf der Erde statt (vgl. NASA 1972). Inwiefern man der Argumentation folgen möchte, dass die Verkleidung mit der Textplatte tatsächlich ein im All angefertigtes Produkt ist, lässt sich diskutieren. Der 3D-Drucker, die Zutaten und Bestandteile des späteren Produkts – alles wurde von der Erde zunächst auf die ISS transportiert, um dort zu dem neuen Objekt umgestaltet zu werden. Sogar der Druckbefehl kam von der Bodenkontrolle. Verschiedene materielle Transformationsprozesse führten schließlich zu dem gewünschten Produkt (vgl. Wodtke 2018: 200–211). Der NASA-Dokumentation folgend, war kein extraterrestrisches Element nötig oder ausschlaggebend, um das Objekt aus seinen irdischen Bestandteilen zu generieren. Somit stellt sich die Frage, ob diese Abdeckplatte mit dem Schriftzug MADE IN SPACE NASA einen größeren Anspruch auf seine Herstellung im All erheben darf als ein auf der ISS beschriebenes Blatt, ein im Computer getippter Befehl oder der selbstgebaute Luftfilteradapter der Apollo 13-Mission 1970, der nach einer Explosion an Bord des Raumschiffs den quadratischen CO2-Filter mit dem inkompatiblen, zylindrischen der Mondlandefähre verband. Ein organisches Beispiel wäre eine zubereitete, verzehrte und verdaute Mahlzeit. Die Frage ist also, welche Transformationsschritte und -formen von irdischem Material im All noch als ‚erdengemacht' oder schon als MADE IN SPACE gelten.

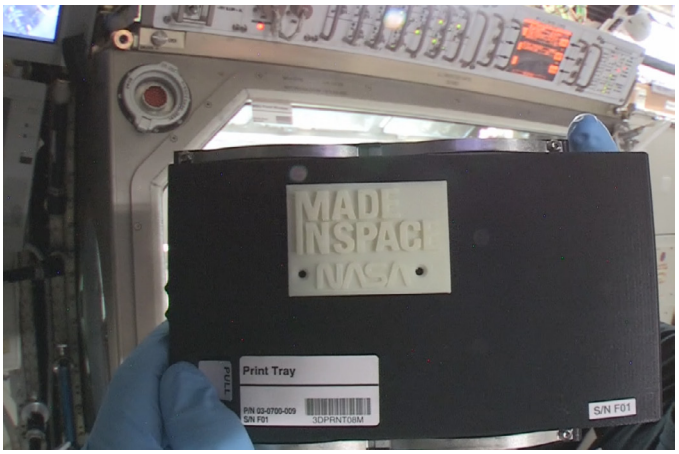

Abb. 7 Druckerblende mit der Aufschrift MADE IN SPACE NASA, die als erstes im All gefertigtes Objekt gilt. Image Credit: NASA/Made in Space.

Praxisfeld 1c): Die archäologische Erforschung vergangener extraterrestrischer Zivilisationen und Kulturen auf anderen Planeten

Außerirdische Zivilisationen – parallele Entwicklung

Isaac Asimov (1979, deutsche Übersetzung 1981) stellte, ausgehend von der Entwicklung des *Homo sapiens* auf der Erde und geprägt von der zeitgenössischen Annahme, dass das Atomzeitalter den Untergang der menschlichen Zivilisation bringen werde,[3] hypothetische Berechnungen an, wie lang die Zeitspanne einer intelligenten Bevölkerung eines Planeten im Verhältnis zu seiner Gesamtexistenz sei. Diese Überlegungen basieren auf der Grundannahme einer parallelen zivilisatorischen Entwicklung auf der Erde und anderen bewohnten Planeten. In diesem bereits verschwindend geringen Zeitraum von etwa 600.000 Jahren bei einer planetaren Lebenszeit von 12 Milliarden Jahren, befinden sich seiner Hypothese folgend nicht alle Zivilisationen auf derselben Entwicklungsstufe – immer analog zur Entwicklung auf der Erde gedacht. Seinen

3 Dazu auch Kristina Jaspers, die „das Nachdenken über die Zukunft unter dem Verdikt der atomaren Bedrohung" (2020: 157) bei Hannah Arendt und Susan Sontag herausarbeitet. Zu den Möglichkeiten archäologischer Untersuchungen entsprechender *Peace Camps* gegen Atomtest: Beck u. a. 2011. Malley (2018: 97–104) stellt heraus, wie gut sich auch der Opener von Indiana Jones and the Kingdom of the Crystal Skull (Steven Spielberg, USA 2008), dessen Handlung in den 1950er Jahren angesiedelt ist, des Narrativs des *Golden Age of Nuclear Fear* bedient.

Berechnungen zufolge befinden sich überhaupt nur 32.500 Planeten gleichzeitig in diesem 600.000-Jahres-Zeitraum. Davon haben 540 das Stadium der Sesshaftwerdung erreicht, auf 270 wurde bereits die Schrift erfunden, auf zehn Planeten fand bereits eine industrielle Revolution statt und auf zwei befinden sich Zivilisationen im nuklearen Zeitalter. Genau diese zwei Zivilisationen können also, entsprechend ihrer technologischen Entwicklung, überhaupt in die Weiten des Weltraums vordringen und in Kontakt mit uns treten bzw. von uns gefunden werden. Berücksichtigt man die Diachronizität dieser Entwicklungen, so gibt es in diesem Modell auf 390 Millionen Planeten Hinterlassenschaften ausgestorbener Zivilisationen (Abb. 8).

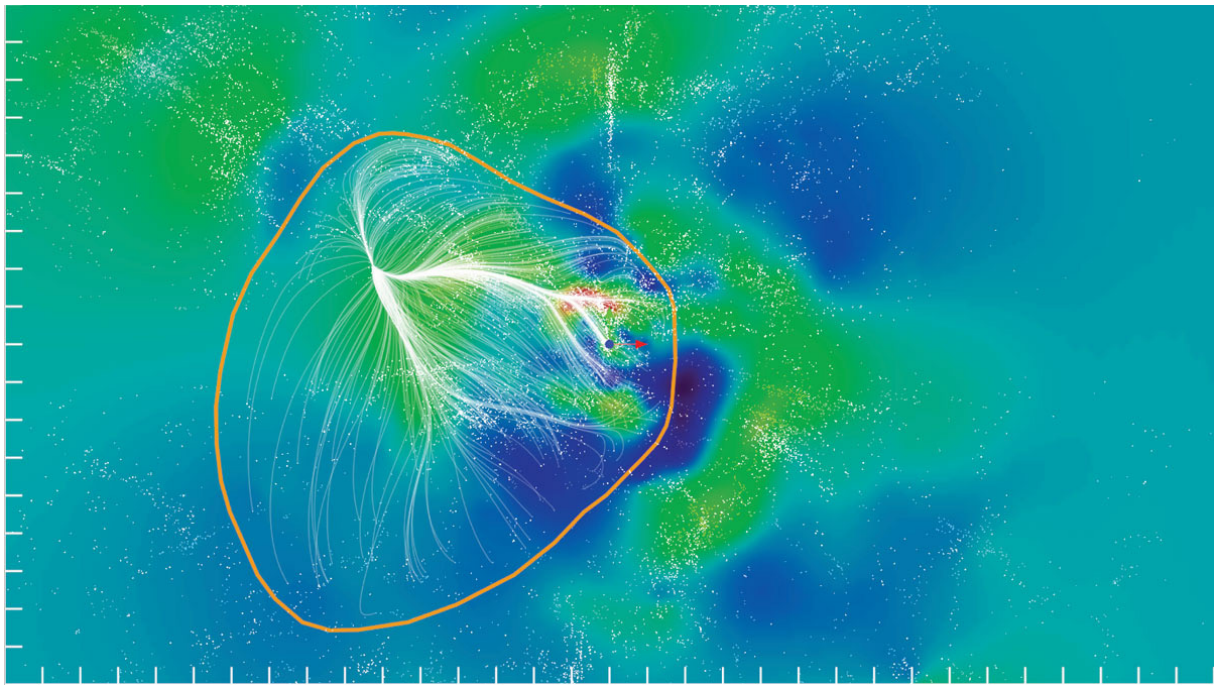

Abb. 8 Bildbeschriftung der NASA (https://apod.nasa.gov/apod/ap140910.html Stand: 14.11.2021): Laniakea: Our Home Supercluster of Galaxies. It is not only one of the largest structures known – it is our home. The just-identified Laniakea Supercluster of galaxies contains thousands of galaxies that includes our Milky Way Galaxy, the Local Group of galaxies, and the entire nearby Virgo Cluster of Galaxies. The colossal supercluster is shown in the above computer-generated visualization, where green areas are rich with white-dot galaxies and white lines indicate motion towards the supercluster center. An outline of Laniakea is given in orange, while the blue dot shows our location. Outside the orange line, galaxies flow into other galactic concentrations. The Laniakea Supercluster spans about 500 million light years and contains about 100,000 times the mass of our Milky Way Galaxy. The discoverers of Laniakea gave it a name that means „immense heaven“ in Hawaiian.” Image Credit: NASA/R. Brent Tully (U. Hawaii) et al., SDvision, DP, CEA/Saclay.

Besonders populär greifen das Motiv der Parallelität beispielsweise der Film Stargate (Roland Emmerich, USA/Frankreich 1994) und die anschließende, über zehn Jahre produzierte Serie Stargate SG-1 (1997–2007) auf. Es geht dabei um Reisen durch ein Torsystem, das von einer technologisch überlegenen, außerirdischen Spezies auf vielen Welten installiert wurde, die mit antiken, vor allem ägyptischen Gottheiten identifiziert werden kann. Der zum irdischen Stargate-Einsatzteam gehörende Daniel Jackson ist neben Indiana Jones der wohl berühmteste Archäologe der Filmgeschichte. Ein jüngeres Beispiel bieten der Film und die Serie Аванпост (Blackout Film 2019, The Blackout Serie 2020), in dem es darum geht, dass Aliens durch DNA-Verbreitung auf der Erde die Menschen nach ihrem Ebenbild erschaffen haben, allerdings mit kleinen, aber nachteiligen Veränderungen. Beide unterhaltsame Umsetzungen haben problematische Bezüge. Sie zeichnen sich durch einen unreflektierten Umgang mit Verschwörungsideologien aus und rücken vor allem die Darstellung einer vermeintlichen militärischen Überlegenheit des Produktionslandes in den Vordergrund der Erzählung. In beiden Fällen sorgt eine außerirdische Spezies, die von den Menschen als göttliche Interpretation tradiert wird, für eine Besiedlung der Erde oder auch mehrerer Planeten nach ihrem Wunsch oder auch Vorbild. Demgemäß verlaufen nicht nur Entwicklungen parallel, Aussehen, Glauben und Wertevorstellungen, Habitus und auch die materielle Kultur ähneln sich. Wenig thematisiert bzw. nur insofern sie der Eskalation einer Konfliktlage und somit dem Spannungsbogen des jeweiligen Plots dient, wird eine geteilte Verantwortung für das gemeinsame Kulturgut. Die auf der Erde lebenden Menschen könnten entsprechend dieser Herkunftslogiken die Gemeinsamkeiten mit außerirdischen Kulturen und

Zivilisationen betonen und eine Form der Zusammengehörigkeit als Verantwortungsgemeinschaft proklamieren. Stattdessen werden, ganz im Sinne des Genres und wohl auch der weltlichen Realität, eher Gegensätze betont und Konflikte befeuert.

Außerirdische Zivilisationen – Alienität

Das Motiv der Parallelität einer Entwicklung intelligenten Lebens auf bewohnbaren Planeten ist im Science-Fiction-Genre beliebt, da es ein grundlegendes Verständnis für Denk- und Handlungsweisen ermöglicht, auf das der Mensch bei der Interpretation von Situationen und den Entscheidungen über sein daraus resultierendes Handeln angewiesen ist. Dies trifft auch auf Praktiken wie den Umgang mit und die Interpretation von materieller Kultur zu. Es handelt sich hierbei um ein rhetorisches Mittel, die Alienität der Darstellbarkeit einer Welt, die jenseits unserer Vorstellungskraft liegt und gleichzeitig ausschließlich Produkt unserer Vorstellungskraft ist, zu überwinden und das Unsagbare zu verschriftlichen oder zu audiovisualisieren. Alienität (Hahn 2008) meint hierbei mehr als eine bloße Verfremdung, sondern eine grundlegende Fremdheit an den Grenzen des Unfassbaren.

Ein Beispiel dafür, wie sich extraterrestrisches Leben dem eigenen Vorstellungsraum entzieht, schildert Stanisław Lem in seinem Roman *Der Unbesiegbare* (Lem 1976). In der Erzählung landet der Raumkreuzer „Der Unbesiegbare“ auf der Suche nach einem verschollenen Schwesterschiff auf dem Planeten Regis III. Der Planet verfügt über Kontinente, Ozeane und eine Atmosphäre. Die Besatzung stellt jedoch fest, dass es auf dem Land kein für sie nachweisliches Leben gibt, und im Wasser nur Algen und kleine Fische, die sich ausschließlich weit vom Ufer entfernt in der Tiefsee aufhalten. An Land finden sie allerdings ruinenartige Gebilde, die die Besatzung zunächst als Stadt anspricht, jedoch bald erkennt, dass die Strukturen nichts mit Bauten oder Infrastruktur gemein haben, wie sie sie kennen:

> „Was sie die ‚Stadt‘ genannt hatten, das glich in Wirklichkeit nicht im geringsten einer irdischen Siedlung. Aus dem Sand der Wanderdünen ragten in unbekannter Tiefe verwurzelte dunkle Massive mit einer stacheligen, bürstenartigen Oberfläche hervor, unähnlich allem, was dem menschlichen Auge je begegnet war. […] Manche sahen aus wie in Falten gelegte, an unendlich vielen Stellen einander durchdringende, dicht verwobene Netze mit Verdickungen an den Knotenpunkten, andere erinnerten an komplizierte Raumarabesken, wie sie übereinandergeschichtete Bienenwaben oder Siebe mit drei- oder fünfeckigen Öffnungen bilden mochten.“ (Lem 1976: 30)

Der Navigator Rohan fragt den Planetologen seines Außenteams, was er dem Kommandanten über die Funde berichten soll:

> „‚Ich bin kein Hellseher‘, entgegnete der Wissenschaftler. ‚Ich bin nicht einmal Archäologe. Im übrigen glaube ich, auch ein Archäologe könnte Ihnen da nicht viel sagen. Mir scheint … ‘ Er brach ab.“ (Lem 1976: 34)

Die Besatzung nimmt verschiedene Messungen und Untersuchungen, darunter auch Ausgrabungen, vor. In einer Höhle weist eine Expedition Schichten organischen Ursprungs nach und stößt dann auf die Überreste einer Maschine, deren Alter sie mit mindestens 300.000 Jahre bestimmen. Durch Funde wie diese, ihre Analyse und Interpretation gelangt die Besatzung des Raumschiffs zu einer Theorie über die Entwicklung einer „toten Evolution“ auf dem Planeten. Demnach, so die These, sind vor Jahrmillionen Maschinen und Technologie, vielleicht durch ein havariertes Raumschiff einer anderen Zivilisation, auf den Planeten gelangt. Sie begannen sich zu entwickeln, eigenständig zu agieren und auch sich zu reproduzieren. Dabei konkurrierten sie mit den urzeitlichen, echsenähnlichen Reptilien, die zu dem Zeitpunkt den Planeten bevölkerten, um Land und Energiereserven. Der Schiffsbiologe fasst die Theorie so zusammen:

> „Im Laufe ihres Bestehens auf dem Planeten, Hunderte Generationen später, hörten die nachfolgenden Mechanismen auf, jenen ähnlich zu sein, von denen sie ausgegangen waren […]. Damit begann also eine tote Evolution, eine Evolution von Maschinen.“ (Lem 1976: 83)

Bei allen Ausführungen zu den Geschehnissen auf dem Planeten und den Rekapitulationen über seine Vergangenheit verfügt die Leserin immer nur über denselben Wissensstand wie die Protagonisten. Auf diese Weise gelingt Lem der Spagat, sich dem menschlichen Verstand und Begriffsspektrum entziehende extraterrestrische Vorgänge und Technologien dennoch so beschreibbar zu machen, dass sie mit dem eigenen Verständnishorizont erfasst werden können. Alle Erklärungen orientieren sich an sprachlichen wie normativen Setzungen und Naturgesetzen, wie sie auf der Erde herrschen oder zumindest theoretisch vorstellbar sind. Die Rückschlüsse werden mit akribischen Forschungen herbeigeführt, bei denen vielfältige archäologische Methodiken wie die der Ausgrabung,

aber auch der Beobachtung, der Materialanalyse, der Dokumentation und der daraus folgenden Interpretation wesentlich sind. Ihre Zusammenschau ist die Grundlage, auf der sich das gesamte Erzähl- wie Erklärungsmodell des Romans aufbaut. Archäologische Denk- und Arbeitsweise bilden hierbei das Narrativ der Annäherung an die Erforschung einer fremden Welt, eines vollständig anderen Planeten mit vielen, sich menschlichen Logiken entziehenden Funden und Vorgängen.

Ein ähnliches Motiv, wie Lem es wortgewandt entwickelt, greift bildgewaltig die Serie THE EXPANSE (USA 2015–2022) auf. Besonders in den ersten Staffeln spielt eine Lebensform, das so genannte Protomolekül, eine zentrale Rolle. Diese unterscheidet sich so sehr von allen menschlichen Lebensarten und Biofunktionen – auch wenn sich diese durch die Kolonialisierung von Mars und Asteroiden bereits drastisch verändert haben –, dass ihre Existenz als Lebensform vom menschlichen Verstand nicht ohne weiteres verarbeitet werden kann (Schmeink 2021). Das führt immer wieder zu lang auserzählten Erklärungen, um den Zuschauenden etwas als immer wieder unbegreiflich Beschriebenes doch visualisierbar und begreifbar zu machen. In der vierten Staffel der Serie befindet sich eine Gruppe von Menschen, Siedler*innen, Söldner*innen und Glücksuchende, auf einem fremden, unbewohnten Planeten, auf dem nicht verstehbare Hinterlassenschaften einer anscheinend ausgestorbenen Bevölkerung aus der Not heraus untersucht und genutzt werden, die ebenfalls nur im Rahmen des Wissens und Verständnisses der Protagonist*innen erklärbar sind. Wie bei Lem scheinen auch hier komplexe Maschinen in eigenständigen und sich selbst kontrollierenden Systemen zu funktionieren, während die zugehörige Zivilisation – ob maschinell oder humanoid – schon Jahrmillionen ausgestorben ist. Als dritte beteiligte Entität der auf dem Planeten ablaufenden Prozesse kommt zusätzlich zur planetaren Evolution und den dort gelandeten Menschen noch das Protomolekül hinzu. In beiden Fällen bringen die Protagonist*innen unterschiedliche, teils fachliche, teils übersinnliche Fähigkeiten ein, um sich das, was sie über die jeweiligen Hinterlassenschaften, ihre Funktionsweisen und die vormaligen Bewohner*innen wissen oder glauben, analytisch herleiten zu können. Bei dieser Erforschung unbekannter Strukturen und Hinterlassenschaften, dem Versuch des Verstehens sowie einer gedanklichen Annährung an fremde Lebens- und Erfahrungswelten handelt es sich um originäre archäologische Verfahrensweisen, die somit in diesen fiktionalen Settings eine größere Bedeutung einnehmen, als man beim Lesen oder Sehen zunächst erkennen mag.

2023 soll ein Computerspiel auf der Grundlage von Lems Romanvorlage *Der Unbesiegbare* auf den Markt kommen. Dies kündigt sich als in einer „retro-future timeline“ angesiedelt an. Dabei dürfte es kein Zufall sein, dass die digitalvisuelle Umsetzung von Regis III und die vom Marsrover *Perseverance* übermittelten Bilder gewisse Ähnlichkeiten aufweisen (vgl. https://store.steampowered.com/app/731040/The_Invincible, Stand: 14.11.2021 mit Abb. 1 und 5). Einerseits benötigt eine Visualisierung des Fremden interpretierbare Ankerpunkte, um eine vermeintlich bekannte Ausgangsbasis zum Aufbau des Unbekannten, und hier Bedrohlichen, zu inszenieren, andererseits bleibt auch der Mars bislang ein uns nur durch Bild- und Tonübertragungen zugänglicher und dadurch mystifizierbarer Ort, der sich einer realen Erfahrung entzieht und somit zusätzlich zu den wissenschaftlichen Ansprüchen auch Spielräume für andere Wissenszugänge und Raumerfahrungen zulässt.

Praxisfeld zwischen 1) und 2): Archäologie und Science-Fiction

Der Film THE MARTIAN (DER MARSIANER – RETTET MARK WATNEY, Ridley Scott, USA/UK 2015) greift das Motiv auf, dass ältere menschliche Hinterlassenschaften, in diesem Fall auf dem Mars, von einem Astronauten, der, irrtümlich für tot gehalten, aufgrund eines Sturms zurückgelassen werden musste, reaktiviert und recycelt werden, um Kontakt mit der Erde aufzunehmen. Er erreichtet ein Hexadezimalsystem, ein eher basales alpha-numerisches Kommunikationssystem, das jedoch nur mithilfe modernster Technik funktioniert und zur Erde übertragen werden kann. Ohne die Auffindung und Ausgrabung der bereits vor seiner Anwesenheit von Menschen auf den Planeten gebrachten Gegenstände, hätte der Protagonist nicht überlebt. Es handelt sich hierbei um eine Science Fiktion, die zu Punkt 2) der Potenziale der Weltraumarchäologie überleitet.

Wie bereits eingangs erwähnt liegt in der Berücksichtigung von fiktionalen Erzählungen großes Potenzial für ein Tätigkeitsfeld, nicht nur, aber besonders der Weltraumarchäologie. Dies speist sich zum einen aus dem Bewusstsein, dass akademisches Wissen neben anderen, legitimen Formen der Wissensproduktion besteht, zu denen beispielsweise künstlerisches, literarisches oder auch spirituelles Wissen gehört, wie es Gorman (2019) exemplarisch für das Verhältnis der Aborigines zum Mond ausführt. Zum anderen ist Science-Fiction eine Gattung, die in ihrer produktiven Vermischung von Fakt und Fiktion in der Lage ist, sich selbst zu überholen. Technologischen

Realisierungen, wie einem Flug ins Weltall, geht immer das kollektive Wunschdenken der Fiktion voraus (Jaspers 2020). Dies schildert der deutsche ESA-Astronaut Maurer, der im November 2021 zur ISS reiste, am Beispiel der Sojus im Vergleich mit einer Crew Dragon-Kapsel des privaten Raumfahrtunternehmens SpaceX. Auf die Frage nach den Unterschieden der beiden Shuttles erläutert er, wie mechanisch die Sojus im Gegensatz zur heutigen Rakete ist. Bei der Sojus

> „hat die Crew sehr viele Interaktionen mit der Kapsel. Bei der Crew Dragon hingegen […] haben [sie] zwei große Bildschirme vor sich. Damit steuern der Pilot oder der Commander das Raumschiff, wobei das meiste aber nur Monitoring ist. Wir fliegen diese Crew Dragon fast nicht mehr selbst, sondern wir überwachen nur noch, dass das Programm so abläuft, wie es vom Boden aus geplant ist. […] Bei der Sojus ist zudem noch sehr viel manuell geplant, das heißt die Kosmonauten erhalten jeden Tag ein Datenblatt. Darin steht, zu welchen Zeiten sie abdocken könnten, falls es einen Notfall gibt, damit sie dann auch vorgeplant an der richtigen Stelle landen. Bei der Dragon kann man eigentlich jederzeit reinspringen und sagen: Wir müssen jetzt weg. Dann übernimmt das der Computer.“ (Ebner 2021)

Dieser Umstand wurde überraschend schnell nach der Ankunft von Maurer auf der ISS relevant, als die komplette Besatzung aufgrund der Gefahr einer Kollision der Station mit Weltraumschrott in die Shuttles evakuiert werden musste. Lange Zeit wurden Filme mit ästhetischen Visionen von Weltraumreisen produziert. Schaut man sich Werbevideos von SpaceX über die Innenausstattung der Crew Dragon an, erkennt man, wie die realen Ausstattungen dieser Reisen nun den filmischen Visionen wie Vorbildern folgen. Das Verhältnis von Fiktion und Science kehrt sich um, ehemalige Zukunftsvisionen nehmen in wissenschaftlicher wie ästhetischer Umsetzung Gestalt an und realisieren sich auf diese Weise in einer Zukunftswerdung.

Von der Vorstellungskraft zur Kulturlandschaft

Die Weltraumarchäologie ist Teil der *Contemporary Archaeology* oder der Archäologie der Moderne. Diese sieht sich der Schwierigkeit ausgesetzt zu beforschen, was ihr vertraut ist; das bekannte materielle Setting in seinem alltäglichen wie sozialen Gefüge lädt zur raschen und scheinbar einzig richtigen Interpretation ein. Möchte man sich einem Heute in einer möglichen Zukunft oder nicht-menschengemachten materiellen Hinterlassenschaften annähern, so eröffnet Science-Fiction gute Möglichkeiten, gewohnte Denkmuster zu überwinden und neue Interpretationen zu wagen. Diese literarische Gattung bietet sich auch deshalb an, da sie mit einer bewussten Vermischung von wissenschaftlichen mit anderen Wissenskategorien wie Kunst, Phantasie oder Spiritualität operiert. Der Austausch entsprechender Wissenspraktiken gerät zunehmend auch in das Interessensgebiet der Wissenschaftskommunikation (Wodtke 2020b). Einen möglichen Zugang zu Planeten und Himmelskörpern jenseits des Mondes, die wir bislang bestenfalls aus schlecht auflösenden Satellitenbildern kennen, beschreibt Gorman für den Pluto folgendermaßen:

> „We could also look at Pluto from a heritage/landscape perspective. Using the World Heritage Convention’s definitions of cultural landscapes, you could argue that it is an associative landscape: it has no actual physical human traces, but remains a repository of beliefs, dreams and visions. […] Our gaze creates Pluto as a place.“ (Gorman 2019: 194)

In dem Moment, in dem sich ein kreativer, neugieriger Geist mit einer Idee des auf der Erde Pluto genannten Himmelskörpers auseinandersetzt, kommt diesem als somit gleichzeitig realem wie fiktiven Ort die Bedeutung einer schützenswerten Kulturlandschaft zu. Das menschliche Bestreben, sich das Vertraute unvertraut zu machen und neue Perspektiven auf scheinbar bekanntes Material zu gewinnen, kann sich durch künstlerische Zugänge und Arbeiten wie analoge und digitale Visualisierungen, darstellendes Spiel und Performances, ludische, lyrische und weitere Produktionen entfalten (Gorman 2020a: 10103). Dabei ergeben sich Überschneidungen mit dem zweiten von mir identifizierten Aspekt der *Space Archaeology*, einer Untersuchung medialen Materials unter literatur- und medienwissenschaftlichen Fragestellungen mit expliziter Berücksichtigung archäologischer Erschließungsmethoden und der *Material Culture Studies*. Denn gegenwärtige, nachhaltige Erzählungen über die Vergangenheit bedienen sich ebenso häufig fiktionaler und illustrierender Elemente wie ästhetischen Zeichnungen vergangener Bauten, Städte sowie Alltagsszenarien, die man in Publikationen oder Ausstellungen findet, oder Nachbauten und Rekonstruktionen in Museen oder archäologischen Parks.

Die Einbeziehung populärkultureller Elemente wie Songs, Filme und fiktionale Texte in die Archäologie hat eine längere Tradition. Studien, die sich mit Archäologie im Film oder im Computerspiel beschäftigen, gibt es inzwischen reichlich. Der jeweilige Fokus dieser Studien ist so unterschiedlich wie die mediale Bandbreite und beschäftigt sich beispielsweise mit dem Authentizitätsgehalt archäologischer Methodik (Ausgrabung vs. Schatz-

suche, dazu auch Holtorf 2007: 63–75) oder der in/korrekten Darstellung antiker Objekte in ihrer Bildsprache oder Formgebung (Mehoke 2009: 887). Anschauliche wie populäre Beispiele bietet der Film TROY (Wolfgang Petersen, USA 2004), der „inspired by Homer“ die Geschichte des Trojanischen Krieges (13./12. Jahrhundert v. Chr., wenn man ihn für ein historisches Ereignis hält) erzählt. In dem Film tragen trojanische Frauen Schmuck, wie er durch den sogenannten Schatz des Priamos (Datierung rund 1.000 Jahre vor dem Trojanischen Krieg) bekannt ist, oder ein Verbündeter überreicht König Agamemnon als Siegesgeschenk nach einer gewonnenen Schlacht eine als „Urne“ bezeichnete rotfigurige Vase, die, so sagt er, sein Vater zu Ehren eines eigenen Sieges habe anfertigen lassen (Erfindung dieser Maltechnik rund 700 Jahre nach dem Trojanischen Krieg).

Die produktive Verknüpfung von Archäologie und Populärkultur muss für die *Space Archaeology* nicht erst erfunden werden. Sie existiert schon lange und hat bereits eigene Strömungen hervorgebracht, wie zum Beispiel die Punk Archaeology. 2013 fand, inspiriert von einer Blogreihe von 2008 bis 2011 (inzwischen hier integriert: https://punkarchaeology.com, Stand: 7.11.2021), eine Konferenz statt, bei der erstmals eine Verknüpfung von Punk-Rock und Archäologie hergestellt wurde. Die anschließende Publikation mit dem Titel *Punk Archaeology* gab der Strömung ihren Namen (Caraher u. a. 2014; vgl. auch Morgan 2015). Ihren manifesten Ausgangspunkt nahm sie 2014 bei Ausgrabungen des *Atari Video Game Burial* in der Wüste von New Mexico. Dort hatte der Computerspielehersteller Atari 1983 eine Deponie für nicht verkaufte und ausrangierte Videospiele eingerichtet. Hunderttausende Exemplare verschiedener Konsolenspiele, darunter des Spieleflops zum gleichnamigen Hollywoodfilm E.T. THE EXTRA-TERRESTRIAL (Steven Spielberg, USA 1982) wurden dort vergraben bzw. entsorgt und durch die Ausgrabungen wieder ans Licht befördert. Von der *Punk Archaeology* ausgehend hat sich der Konzeptbegriff des *Archaeogaming* etabliert, der Archäologie auf sehr produktive und gewinnbringende Weise mit Computerspielen zusammenbringt (Reinhard 2018). Jüngst ist im Sinne einer transhumanen Zusammenführung verschiedener Aspekte der *Digital Archaeology* die Idee einer *Archaeology of Care* hinzugekommen (Caraher 2019), deren Verantwortungsbewusstsein auch dahingehend für die Weltraumarchäologie greift, sich mit materiellen Hinterlassenschaften jenseits von Majoritäten verantwortungsvoll zu beschäftigen.

Praxisfeld 2): Die archäologische Erforschung des Heute in der Zukunft

Der Ausgrabung des Heute in der Zukunft lässt sich auf einer theoretischen Ebene mit methodischen Überlegungen begegnen. Gleichzeitigkeiten von Gegenwart und Zukunft im archäologischen Sinne setzt voraus, dass sich zukünftige Akteur*innen mit zeitgenössischen (oder auch älteren) Funden oder Befunden beschäftigen. Um dies darstellbar zu machen, lassen sich zwei Zugriffe unterscheiden: Entweder gelangen Objekte bzw. Assemblages aus der Jetztzeit in die Zukunft, wie das folgende Beispiel von Voyager und V’ger zeigt – dies betrifft im Übrigen alle archäologischen Objekte, die wir heute zutage fördern. Oder ein nichtlinearer Zeitverlauf ermöglicht eine Gleichzeitigkeit. Dies kann beispielsweise in Form von Zeitreisen mit einer Zeitmaschine oder durch Temporalitätsverschiebungen gelingen. Wie werden Archäolog*innen in der Zukunft arbeiten? Welchen Blick auf unser Heute werden sie haben? Welche Rekonstruktionen vornehmen? Neben allen technischen Neuerungen, die Einzug in die archäologische Feldarbeit halten werden, ist davon auszugehen, dass auch sie einmal die Fragen stellen werden: Wie haben die Menschen früher (also in unserem Heute) gelebt? Wie waren ihre Gesellschaften strukturiert? Wie funktionierten ihre Sozialsysteme? Welche Dinge haben sie wofür benutzt? Bisweilen geben wir der Nachwelt auch bewusste oder unbewusste Hinweise darauf: Trägt eine Verstorbene ein Namenskettchen, handelt es sich dann um den eigenen Namen oder den der Liebsten, der besten Freundin, eines Elternteils? Wird in den Plastikmüllablagerungen der Tiefsee eine überproportionale Häufung an OP- und FFP2-Masken als ‚Coronaschicht‘ interpretiert (Angelo u. a. 2021) oder auf eine zunehmende Luftverschmutzung des Planeten zurückgeführt, die das ständige Tragen dieser Masken erforderlich machte? Im Folgenden soll von diesen denkbaren Modellen einer Erforschung des Heute in der Zukunft eines umfänglicher besprochen werden, nämlich das der Gleichzeitigkeit von Gegenwart und Zukunft durch maschinelle Zeitreisen, um die implizite Anwendung archäologischer Verfahrensweisen bei diesen Fiktionen exemplarisch zu verdeutlichen, während alle weiteren Beispiele nur kurz abgehandelt werden.

Voyager wird zu V'ger

Die beiden Raumsonden Voyager 1 und Voyager 2 sind die ersten menschengemachten Objekte, die unser Sonnensystem verlassen haben. 1977 gestartet, trat Voyager 1 am 25. August 2012 und Voyager 2 am 5. November 2018 in den interstellaren Raum ein. Über Twitter kann die Weltbevölkerungen ihre stetig steigende Entfernung zur Erde mitverfolgen (Abb. 9). Wohin wird ihre Reise gehen? Auf wen oder was werden sie stoßen? Und wird die Menschheit jemals davon erfahren? Im Film Star Trek: The Motion Picture (Robert Wise, USA 1979) wird das Raumschiff Enterprise ausgeschickt, um eine Energiewolke zu ergründen, die sich der Erde nähert und dabei bereits einige Zerstörung angerichtet hat. Nach einer Kontaktaufnahme erkennt die Besatzung, dass die Wolke eigentlich ein riesiges Raumschiff ist und die Zerstörungen die Ergebnisse misslungener Kommunikationsversuche. Die Deltanerin Lieutenant Ilia wird von der Wolke okkupiert und in eine Art Cyborg verwandelt. Von ihr erfährt die Crew, dass die Wolke sich selbst als V'ger bezeichnet und auf der Suche nach ihrem Schöpfer ist, den sie auf der Erde vermutet. Die Crew findet heraus,

> „dass V'ger die teilweise verschmutzte Aufschrift von ‚Voyager 6' ist, einer von der NASA im 20. Jahrhundert gestarteten Raumsonde, deren primäres Ziel es war, das gesamte Wissen über das Universum zu sammeln. Auf ihrem Weg ist sie zu einer Maschinenzivilisation gelangt, die den Auftrag der Voyager-Sonde wörtlich nahm und mit ihrer Technik Voyager zu dem weiterentwickelte, was V'ger darstellt. V'ger hatte die Reise fortgesetzt, bald alles Erlernbare gelernt und sich deshalb auf den Weg zurück zur Erde begeben, um das gesammelte Wissen den Menschen als Schöpfern zu überbringen. Der Wissenstransfer scheiterte jedoch, da auf der Erde niemand mehr den Kommunikationscode verstand." (de.wikipedia.org/wiki/Star_Trek:_Der_Film. Stand: 7.11.2021)

Rational betrachtet ist es wahrscheinlicher, dass wir einfach irgendwann nichts mehr von den beiden Voyager-Sonden hören werden. Sie werden in die Tiefen des Alls entschwinden und sollten sie wirklich in einigen Jahrhunderten oder Jahrtausenden irdischer Zeitrechnung auf intelligentes Leben treffen, sind sie selbst archäologische Artefakte einer vergangenen Kultur, nämlich der USA der 1970er Jahre.

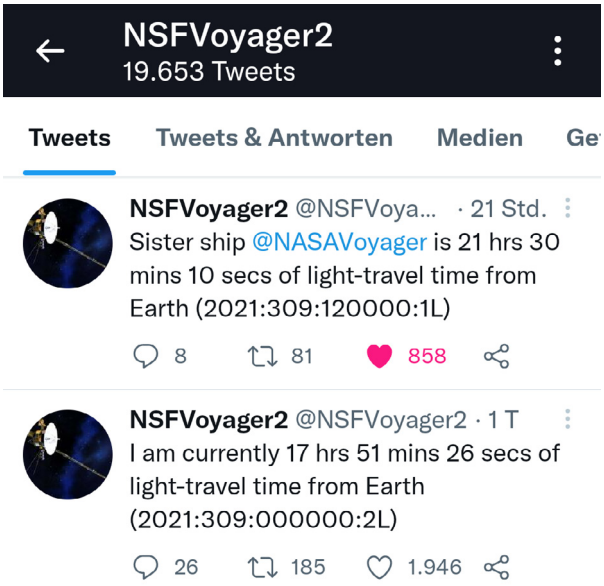

Abb. 9 Twitter Screenshot vom 06. November 2021.

Zeitreisen mit einer Zeitmaschine

Eines der bekanntesten und zudem frühesten Werke, das einen Zeitreisenden aus der Jetztzeit des Verfassers in eine Zukunft befördert, wo sich der Protagonist archäologisch betätigt, ist Herbert G. Wells *Die Zeitmaschine* von 1895 (Wells 1975). Der Protagonist erfindet darin eine Maschine, mit der er sich, immer am selben Ort verbleibend, durch die Zeit bewegen kann. Ausgangspunkt ist sein Laboratorium in London. Er gelangt in das Jahr 802.701 und bereits ‚unterwegs' beobachtet er Verfalls-, Entstehungs- und wieder Verfallsprozesse der umgebenden

Gebäude sowie Veränderungen der Landschaft (Wells 1975: 34–35), wie sie anhand archäologischer und geologischer Stratigraphie untersucht werden können (Wodtke 2020a). Aufgrund seiner eigenen Bewegung im Zeit-Raum ist hierbei von einer Horizontalstratigraphie zu sprechen. Während seines Aufenthalts im Jahr 802.701 erkennt er, dass alle Gebäude stark verfallen und ruinös, teilweise vollständig eingestürzt sind. Noch stehende Statuen sind fragmentiert, Metalle patiniert. Er schließt daraus, dass die Zivilisation, die diese Gebäude und Statuen errichtet hat, nicht mehr existiert. Bewohnt werden die Ruinen von den Eloi. Eine andere Spezies, die Morlocks, die seine Zeitmaschine stehlen, scheuen das Tageslicht und leben unter der Erde. Bei seinen Erkundungen stößt der Zeitreisende auf ein Gebäude, dass sich von den anderen optisch unterscheidet. Es handelt sich um

> „einen gewaltigen grünen Bau von anderem Charakter als alles, was ich bisher gesehen hatte. Er war größer als der größte Palast und Trümmerhaufen, die ich kannte, und die Fassade sah orientalisch aus; die Oberfläche hatte den Glanz wie auch die blaßgrüne Färbung – eine Art bläulichen Grüns – einer gewissen Art Porzellan. Dieser Unterschied im Aussehen deutete auf einen Unterschied im Gebrauch und ich hatte Lust, weiter vorzudringen und ihn zu erforschen.“ (Wells 1975: 93–94)

Der Protagonist gelangt also durch die archäologische Methode des Analogieschlusses – Größe und anderer Charakter des Baus, der ihm „orientalisch“ erscheint – zu dem Ergebnis, dass er eine andere Funktion gehabt haben muss als die ihm bereits bekannten. Er kommt zu dem Schluss, dass es sich wohl um ein gigantisches Museum gehandelt hat und durchstreift die Räume auf der Suche nach Werkzeugen oder Hilfsmitteln im Kampf gegen die Morlocks. Dabei werden detaillierte Erhaltungszustände des Museumsinventars sowie Ausführungen zu taphonomischen Prozessen beschrieben:

> „Dies war offenbar die paläontologische Abteilung, und es mußte eine sehr glänzende Sammlung von Fossilien gewesen sein, obgleich der unvermeidliche Prozeß des Verfalls, der eine Zeitlang abgewehrt war und durch das Aussterben von Bakterien und Pilzen neunzig Prozent seiner Kraft verloren hatte, trotzdem mit äußerster Sicherheit, wenn auch mit äußerster Langsamkeit, von neuem an all ihren Schätzen arbeitete.“ (Wells 1975: 116)

Dann beschreibt er, wie sich einzelne Artefakte in vakuumverschlossenen Vitrinen erhalten haben und was passiert, als er diese öffnet:

> „Und schließlich fand ich in einem der wirklich luftdichten Kästen eine Schachtel Streichhölzer. Ich probierte sie begierig. Sie waren vollkommen gut erhalten. Sie waren nicht einmal feucht.“ (Wells 1975: 122)

Das Motiv der jahrhunderte- oder sogar jahrtausendelangen Erhaltung durch luftdichte Versieglung, manifestiert durch den Erhalt der Streichhölzer, spielt eine wesentliche Rolle für den Fortgang der Geschichte. In anderen Fällen sind genau gegenteilige taphonomische Beschreibungen relevant für den weiteren Handlungsverlauf. Im Film Tomb Raider (Roar Uthaug, USA 2018) beispielsweise, in dem Lara Croft, anders als in den früheren Verfilmungen (2001 und 2003), explizit keine Archäologin ist, sondern eine von ihrem Vater verlassene junge Frau, die aus Verzweiflung den Mut aufbringt, in ein verschollenes Grabmal einzudringen, ist die Mumie der Königin Himiko beim Aufdecken des Sarkophags wenige Augenblicke gänzlich unversehrt, bevor ihr Antlitz durch den Kontakt mit Luft zu Staub zerfällt. Dies wird als stilistisches Mittel genutzt, eine im Film mystisch inszenierte Todesaura zu visualisieren, die sich kurz darauf als durch Himiko übertragene und immer noch ansteckende, tödliche Krankheit herausstellt. Hierbei handelt es sich um Beispiele, wie materielle Verfallsprozesse, die bei der Einordnung archäologischer Funde und Befunde eine wichtige Rolle spielen, relevant für den Fortgang der jeweiligen Handlung sind. Sie bedürfen dabei keiner detaillierten physischen oder chemischen Erklärung oder korrekten Beschreibung, sondern sind selbstverständlicher Bestandteil eines populärwissenschaftlichen Bewusstseins, das zur Sensibilisierung solcher Prozesse beiträgt.

In *Die Zeitmaschine* beherbergt das grünglasierte Museum schließlich auch die Überreste einer Bibliothek: „Die braunen und verkohlten Fetzen, die an den Seiten hingen, erkannte ich alsbald als die verwesenden Spuren von Büchern“ (Wells 1975: 121). Dieser konkreten Beobachtung wird im Buch nur ein Satz gewidmet. In den beiden gleichnamigen Verfilmungen The Time Machine (George Pal, USA 1960 und Simon Wells, USA 2002) wird sie hingegen ausführlich dargestellt. In der Verfilmung von 1960 versucht der Zeitreisende namens George bei einem gemeinsamen Essen mit den Eloi durch Fragen mehr über ihre Kultur und Gesellschaftsform herauszufinden. Diese sind jedoch höchst desinteressiert am Gespräch, sodass der Fragende neu ansetzt: „‚Perhaps you … Do you have books?‘ [Eloi]: ‚Books? Yes, we have books.‘ [George]: ‚Ooh wonderful! I … I can learn all about you from books, books will tell me what I want to know. Could I see the books?‘“ (TC: 00:58:54 bis 00:59:13).

Der gegenüber Georges Euphorie gleichgültige Eloi steht auf und führt ihn in eine Art Bibliothek. Neben den die Bildeinstellung rahmenden Bücherregalen gehören u. a. ein verstaubter Sessel, eine wie aus grünem Stein gefertigte ägyptisierende Statuette und im Hintergrund ein teils im Boden eingelassener Pithos zur Raumausstattung. Die Seiten des in englischer Sprache gedruckten Buches, das George aufschlägt, sind brüchig und zerbröseln unter seinen Fingern, als er das Buch schließt, zerfällt es zu Staub, ebenso wie die anderen im Regal, die er berührt. Er skandiert die Hoffnungslosigkeit einer Zukunft ohne tradiertes Wissen und verlässt wutentbrannt die Bibliothek. Das Medium Buch ist jedoch aufgrund seiner materialen Beschaffenheit nicht dafür geeignet, zehntausende oder hunderttausende Jahre zu überdauern. Sein Zerfallen steht sinnbildlich für eine lange Zeitspanne, in der Wissen ungenutzt blieb, und damit gleichsam für den Verlust des Wissens. Der Verfallsprozess des bedruckten Papiers, ein in der Archäologie sehr bekanntes Phänomen, symbolisiert dies auch im Hinblick auf die ruinösen Gebäude und eine damit einhergehende untergegangene Zivilisation.

Später im Film wird ein anderes fiktiv-futuristisches Erinnerungsmedium vorgestellt. Es handelt sich um metallene Ringe, die auf einer Art Tisch in Drehung gebracht werden müssen. Sodann ertönt eine Stimme, die vergangene Ereignisse referiert oder einen Zeitzeug*innenbericht erzählt. Interessanterweise erregen dieses Speichermedium, seine Funktion, Inhalte und Potenziale, die eine Dingforscherin neugierig machen, jedoch nicht dasselbe Interesse des Zeitreisenden wie zuvor die verlorenen Bücher. Sein Vorkommen im Film dient lediglich dazu, beim Protagonisten wie der Zuschauerin einige Wissenslücken über die Entstehung der beiden in dieser Zeit existierenden Menschengattungen Eloi und Morlocks zu schließen. In dieser Erklärung liegt auch eine der größten Abweichungen zur Romanvorlage mit ihrer starken sozialpolitischen Stoßrichtung. Darin erklärt sich der Zeitreisende die Evolution durch gesellschaftliche Unterschiede von einer vormals privilegierten, oberirdisch lebenden Bevölkerung und einem für deren Annehmlichkeiten schuftenden, ins Unterirdische verbannten Proletariat. Im Film The Time Machine von 2002 ist der Zugang zu Wissen durch Bücher noch einmal anders verarbeitet und um einen eigenständig agierenden holographischen Bibliothekar erweitert, der aus allen weltweit zugänglichen Medien und Datenbanken rezitieren kann. Der Avatar überdauert die Jahrtausende auf mehr oder weniger logisch erklärbare Weise, wodurch das gesammelte Wissen trotz des physischen Zerfalls der Bücher nicht verloren ist. Dass einige Eloi bei der Ankunft des Zeitreisenden, der hier Alexander heißt, Englisch sprechen, verdanken sie jedoch nicht der Unterweisung durch die KI, sondern gesammelten Inschriftenfragmenten, Überresten aus dem heutigen New York, die sie in einer Mischung aus Kunstkabinett und Studierstube in einer Senke im Boden im Stile eines kleinen Amphitheaters zusammengestellt haben. Auch hier ist eine typische archäologische Lerntechnik, untergegangene Sprachen aus überlieferten Fragmenten zu rekonstruieren, zentral, um die Kommunikation über einen Zeitraum von Jahrhunderttausenden zu ermöglichen.

Während beide Filme den Verlust und Erhalt in teils emotional aufgeladenen Szenen ausführlich zelebrieren, rekurriert der Roman immer wieder auf Aspekte verlorenen Wissens und einer zivilisatorischen Rückentwicklung. Eine Zuspitzung im physischen Moment der zerfallenden Bücher, die die Visualisierungen benötigt, um sie als Ausgangs- bzw. Bezugspunkt für weitere Handlungsstränge nutzen zu können, ist im Roman nicht nötig. Dieses Motiv ist wiederum eng mit Dystopien und Weltuntergangsszenarien verknüpft. In einer kannibalischen Umwelt verkehren sich sinnbildlich aufgeladene Objekte in ihr Gegenteil. Ikonisch ist beispielsweise die Schlange verlassener Fahrzeuge auf dem Highway, wie sie in verschiedenen Fassungen im Vorspann mehrere Staffeln der Serie The Walking Dead (USA 2010–2022) vorkommt. Autos, die stehen, anstatt zu fahren und die Straßen aus der Stadt blockieren, zeigen den verzweifelten Versuch der Flucht und sind gleichzeitig Relikte eskapistischer Un/Möglichkeit. Auch hier wird die vergehende Zeit, die Routine nach einer Zombie-Apokalypse durch die langsam verrottenden Autos visualisiert. Sie stehen, wie die zerfallenden Bücher, für den Verlust eines einst erreichten technischen und damit zivilisatorischen Fortschritts, ein Sinnbild für nicht mehr mögliche Mobilität. In der Serie sind es die degenerierten Zombies, in *Die Zeitmaschine* sind es die unterirdisch lebenden Morlocks, die sich von den Eloi ernähren, die sie oberirdisch wie Vieh halten. Materielle Kultur, ihr Bestehen wie ihre Zerfallsprozesse, werden in diesen Zukünften zum Anzeiger eines verlorenen oder nicht mehr relevanten Wissens über ihre Produktion, ihre Distribution, ihren Gebrauch und ihren Nutzen.

Zeitreisen durch Temporalitätsverschiebungen

Eine andere, besonders universale Form der Diachronizität wird in der Folge Mad Idolatry (S01F12) der Serie The Orville (Seth MacFarlane, USA 2017/2018) verhandelt. Als persiflierende Hommage an Star Trek erlebt die Besatzung des Raumschiffs Orville verschiedene Abenteuer. In der besagten Folge stößt sie – im wahrsten Sinne

– auf einen Planeten, der ganz plötzlich auftaucht. Die Crew findet heraus, dass er sich alle elf Tage nur für kurze Zeit in ihrem Universum befindet. In dem anderen Universum, in dem er in dieser Zeitspanne ist, herrscht jedoch eine andere Temporalität, sodass die Zivilisation in elf Erdentagen umgerechnet jeweils etwa 700 Jahre Entwicklung durchlebt. Begleitet werden vier Erscheinungszyklen, die, angelehnt an die kulturelle irdische Entwicklung, epochale Äquivalente zur Bronzezeit, zum Mittelalter, zum 21. Jahrhundert und zu einer Zukunftsvision inklusive inzwischen entwickelter interstellarer Raumfahrt zeigen. Auf der Orville vergehen hingegen nur wenige Wochen. Diese charmante Darstellung einer nichtlinearen Zeitlichkeit gewährt dem zukünftigen Heute somit in kurzer Folge Einblicke in eine erdenähnliche Vergangenheit, Gegenwart und potenzielle Zukunft. Sie funktioniert aber nur, wenn, wie nach Asimov (1979, 1981) dargelegt, von einer Parallelentwicklung zivilisatorischer Entwicklung ausgegangen wird.

Fazit

Dieser Beitrag möchte den Grundstock für eine deutschsprachige Beschäftigung mit dem Tätigkeitsfeld der Weltraumarchäologie legen und ihre Potenziale ausloten. Dazu wurden sowohl bereits bestehende Forschungsansätze referiert als auch Erweiterungen um die Auseinandersetzung mit archäologischen Methoden in Realität wie Fiktion als transdisziplinäre Schnittstelle sowie als mögliche Zukunftspraktiken angeboten. Diese Verknüpfung zeigt die Vielfalt an Potenzialen einer Beschäftigung mit der *Space Archaeology*. Die beiden von mir identifizierten Ansätze kommen in einem ikonischen Motiv zusammen: In Planet of the Apes (Franklin J. Schaffner, USA 1968) landet der Raumfahrer George Taylor durch Zeitdilatation zunächst ohne sein Wissen wieder auf der Erde des Jahres 3978, die inzwischen von intelligenten Affen bevölkert ist. Dort erregt er die Aufmerksamkeit des Archäologen Dr. Cornelius und seiner Verlobten Dr. Zira, die die Theorie verfolgen, dass die Affen von einer anderen Spezies, möglicherweise den Menschen, abstammen. Nach einigen Wirrungen landet Taylor bei einer Ausgrabung in der „verbotenen Zone“, bei der Cornelius ihm einige Funde zeigt. Dabei handelt es sich um Objekte irdischer Alltagskultur, die Taylor sehr vertraut sind. In ihm reift die Erkenntnis, nicht auf einem anderen Planeten gelandet zu sein, wie er bis zu diesem Zeitpunkt, nur Minuten vor Schluss des Filmes, dachte, sondern auf der ihm bekannten Erde, und er gewinnt darüber Gewissheit durch die letzte Einstellung, die den Blick auf die halb verschüttete Freiheitsstatue freigibt (Abb. 10). Eine vermeintlich extraterrestrische Ausgrabung, durchgeführt von einer an ihrer Vergangenheit interessierten Spezies, offenbart sich als Freilegung einer posthumanistischen Erforschung des ‚Raumschiffs Erde‘ (Grotkopp 2021).

Abb. 10 Street Art in Berlin-Moabit, die das ikonische Motiv der verschütteten Freiheitsstatue (im Hintergrund) aus Planet of the Apes (Franklin J. Schaffner, USA 1968) aufgreift und auf ein Berliner Wahrzeichen, die Siegessäule, überträgt. Foto: Jürgen Morgenroth, https://aloi.photo/, Stand 1.8.2022.

Mit einer stetig wachsenden Anzahl an Satelliten ist der Orbit des Planeten Erde längst selbst zu einer Kulturlandschaft geworden (Gorman 2005; 2009). Dasselbe gilt für jeden anderen Planeten, Kometen oder Ort im Weltraum, den wir Kraft unserer Vorstellung gestalten und vielleicht auch eines Tages bereisen können. Werden wir also bald neben dem Bodenarchiv (Wodtke 2020a) auch das Weltraumarchiv etablieren? In der *Space Archaeology* kann das Bestreben einer extraterrestrischen Archäologie mit dem Wunsch kumulieren, den eigenen Planeten mit seiner Vergangenheit und seinen materiellen Hinterlassenschaften und besonders auch in seiner immer sichtbareren Fragilität selbst als ein Raumschiff zu begreifen, das somit in derselben methodologischen wie praxeologischen Weise archäologisch (ontologisch) erschlossen werden kann wie jedes menschengemachte Objekt. In diesem Verständnis, wie metaphorisch es auch angelegt sein mag, verdichtet und manifestiert sich das technologische Verständnis einer posthumanistischen Weltwahrnehmung, die dem Umstand Rechnung trägt, dass die Dichotomie zwischen *Kultur* und *Natur* (Wodtke 2018) längst zu Ungunsten unseres Planeten aufgehoben ist.

Im Frühjahr 2021 schrieb die European Space Agency (ESA) Stellen für Astronaut*innen aus. Gesucht wurde dezidiert ein diverses Team, Voraussetzungen waren u. a. Studienabschlüsse in naturwissenschaftlichen, technischen oder medizinischen Fächern. Über 23.000 Bewerbungen sind eingegangen. Die letzte Ausschreibungsrunde davor fand 2008 statt: Sollte es also etwa 2034 erneut einen entsprechenden Aufruf geben, schließt dann der Anspruch einer inhaltlichen Vielfalt vielleicht auch den Bedarf nach geistes- und kulturwissenschaftlichen Kompetenzen im Weltall mit ein, um dem rasant wachsenden Tätigkeitsfeld der *Space Archaeology* gerecht zu werden. Zunächst war es jedoch das damit verglichen eher bescheidene Ziel dieses Beitrags das Betätigungsfeld der Weltraumarchäologie in den deutschsprachigen wissenschaftlichen Diskurs einzuführen. Der Schwerpunkt lag dabei sowohl auf der Vorstellung bisheriger Ansätze als auch darin, diese in ihrem disziplinenübergreifenden Potenzial mit fiktionalen, wissensgenerierenden Beiträgen zu verknüpfen und die Zukunftsrelevanz archäologischer Methodiken und Fragestellungen aufzuzeigen. Denn jede Kulturlandschaft, in welchem Raum sie sich auch befindet, verdient einen verantwortungsvollen archäologischen Zugriff. Diese Verantwortung für Kulturgut, sei es im Bereich einer Archäologie der Moderne, auf dem Mond oder einer nichtirdischen Zivilisation, muss man sich nicht nur immer wieder vor Augen führen, Weltraumarchäolog*innen sind jetzt in der Pflicht, sie selbstbewusst anzunehmen, bevor die privatisierte Raumfahrt Fragen des kulturellen Erbes den wirtschaftlichen Interessen weltallbegeisterter Milliardäre vollständig unterordnet.

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Interdisciplinary Contentions in Archaeology: An Introduction

Artur Ribeiro and Alexandra Ion

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Interdisciplinary Contentions in Archaeology: An Introduction

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Abstract

It is rare to engage with archaeology nowadays without stumbling upon references to inter-, multi-, cross-, and transdisciplinary research. It seems that any archaeological project that wishes to be successful must engage somehow with disciplines other than archaeology. However, a closer look into interdisciplinary archaeology and its cognates is not as straightforward as it first appears. The aim of this introduction is to outline the context of interdisciplinarity in archaeology and introduce the several topics discussed in the papers composing this current theme issue.

Keywords

Interdisciplinarity, methods, discipline, science, research

Zusammenfassung

Wenn man sich heutzutage mit Archäologie beschäftigt, stolpert man bald über Verweise auf inter-, multi-, und transdisziplinäre Forschung. Es scheint, dass jedes archäologische Projekt mit anderen Disziplinen zusammenarbeiten muss. Allerdings zeigt ein genauerer Blick in die interdisziplinär angelegte Archäologie und verwandte Disziplinen, dass diese Ansicht zu einfach ist. Ziel dieser Einführung ist es, den Kontext der Interdisziplinarität in der Archäologie zu skizzieren und die verschiedenen Themen vorzustellen, die in den Beiträgen des vorliegenden Themenheftes diskutiert werden.

Schlagwörter

Interdisziplinarität, Methoden, Disziplin, Naturwissenschaft, Forschung

Interdisciplinary Archaeology as Ideology

In their book *Evidential Reasoning in Archaeology*, Alison Wylie and Robert Chapman (2016: 15) observe that there is an "epistemic anxiety" inherent to archaeological reasoning, a fear that our knowledge about the past is fragmentary and/or not grounded in objective evidence. To mitigate this assumed problem, archaeologists are expanding their epistemic and methodological apparatus moving into other disciplines or getting involved in collaborations. This has happened through what has been called "interdisciplinary" and its variants "multidisciplinary", "pluridisciplinary", and "transdisciplinary" research. These terms are used in all facets of archaeology, but especially in the context of large projects and the archaeological sciences. Interdisciplinarity and its cognates have become very prominent in archaeology in the last decades, especially in light of what Kristian Kristiansen has called the "Third Science Revolution" (2014).

Although interdisciplinarity can manifest in a wide variety of ways, the way in which it operates in the "Third Science Revolution" is by combining and analysing data through methods derived from different disciplines. The application of scientific techniques from genetic studies on data recovered archaeologically is a classic case of interdisciplinary research. The establishment of correlations between environmental archives and historical records is another good example of interdisciplinary research.

When we think of interdisciplinary archaeology as the straightforward process of applying methods and techniques from a diverse range of disciplines, it is safe to say that archaeology has always been interdisciplinary; archaeology has always been dependent on techniques and methods of other disciplines (Díaz-Andreu and Coltofean-Arizancu 2021). Naturally, if all of archaeology is interdisciplinary to some extent, when the term "interdisciplinary" is used today, to what does it actually refer to? Take the example of the European Association of Archaeologists annual conference of 2020, where at least 20 out of 160 session titles contained the word "interdisciplinary" or a variant thereof. How is the research promoted in these sessions different from the rest of archaeological practice? What most of these references to interdisciplinarity signal is something more than just combining different disciplinary practices. As Liv Nilsson Stutz has pointed out, interdisciplinary research in archaeology follows a rather formulaic logic by combining ideas, methods, and techniques of the natural sciences with those of the human sciences; in this combination, the natural sciences have the upper hand as they are today considered the more objective and reliable source of knowledge (Nilsson Stutz 2017: 51). At face value, interdisciplinary archaeology might seem just another way of conducting archaeological practice, but interdisciplinary practice is much more than that: it is a distinct historical and social product. As Kristiansen (2014: 12–13) points out, a good part of the interdisciplinary archaeology conducted during the "Third Science Revolution" is a result of developments outside of archaeology, such as in DNA sequencing and the creation of the European Research Council, but this does not diminish the agency of those archaeologists who have actively sought and pursued genetic research and large-scale funding. But as the papers in this special issue discuss, interdisciplinary archaeology is more than simply a combination of methods and techniques from different disciplines, it is an ideology.

The historical, social, and theoretical context of interdisciplinary archaeology has flown largely under the radar; to many scholars, interdisciplinary archaeology is simply something that is practiced. This contrasts with the processual programme of the 1960s and 1970s, to which a lot of the scientific interdisciplinary archaeology of today is compared (Sørensen 2017; Ribeiro 2019). Whereas processual archaeology had distinct underlying theoretical and methodological premises (e.g., Binford 1965; Clarke 1973), often linked to functionalism, systems-theory, the deductive-nomological approach, the hypothetico-deductive approach, or cultural evolutionary theory, to name only a few, the interdisciplinary archaeology of today forms a similar set of ideas and practices but lacks much of the theoretical background of processual archaeology. The lack of theoretical background literature does not mean that interdisciplinary archaeology is just a form of *praxis*, devoid of any theoretical or political clout. Much on the contrary, interdisciplinary archaeology is steeped in theoretical and political consequences.

As has been pointed out by one the most prominent scholars currently studying interdisciplinarity, Julie Thompson Klein, interdisciplinarity is inherently meaningless (2005: 63). We assume that what Klein is saying is that interdisciplinarity is not really anything in and of itself, but rather something that scientific practitioners shape and dictate through their actions (see also Sørensen this issue). What is of interest to us is how archaeologists have shaped the practices that today can be qualified as "interdisciplinary".

More Is Less

More than just a combination of different ideas and methods, the interdisciplinary archaeology of today is heavily data-centric, and it refers to the methods of data retrieval, their analysis, and ultimately, their display in publications. Thus, while interdisciplinarity might have different meanings according to different archaeologists, it is most often evoked when a*ddressing the use of scientific techniques to obtain and analyse archaeological data*. In practice, interdisciplinarity is most explicit in large-scale funding, large-scale projects, where teams are composed of specialists of very specific techniques and methods. Isotope, data modelling and aDNA are currently the most popular specializations in archaeological research today. The data studied through isotope or through scientific modelling must nevertheless be archaeological – in this sense, the role of archaeology is that of retrieving data that is then studied through scientific methods. The classic case of this type of research is aDNA research, such as the first genomic histories of Europe (e.g., Haak et al. 2015). This type of research is interdisciplinary insofar as the material under analysis through DNA methods is recovered archaeologically. However, more often than not, the field archaeologists who have ceded the data have little say in their interpretation. The comparison of different archaeological proxies is also a common way of conducting interdisciplinary research, where different forms of data serve as a stand-in for what was happening in the past, for example radiocarbon dates as a proxies for settlement intensity, foraminifera as a proxy for past climate, and diverse pollens as proxy for past diet strategies. In this type of research, the central aim is consilience, that is to say, the combination of data obtained through different disciplines in order to strengthen an argument.

Both the study of ancient DNA material and the modelling of proxies have their advantages and disadvantages. The advantage of this type of research is that through large-scale funding, it becomes possible to obtain a much wider picture of the conditions of life in the past. Whereas archaeologists who rely exclusively on the direct and readily available data provided by excavation are limited to knowing and understanding what that excavation evinces, the interdisciplinary archaeology of today can also provide additional information concerning farming practices in the past across entire regions, the climatic history over hundreds of years, the intensity of occupation of a certain region during thousands of years, or very accurate and detailed chronologies of occupation, to name only a few. This type of research, in turn, has opened up archaeology to wider disciplinary networks, making it common for archaeologists to grace the pages of very high-impact factor journals, and in the process, access even larger sources of funding.

The disadvantage of this type of interdisciplinary research has been discussed quite comprehensively (Ion 2017; Sørensen 2017; Ribeiro 2019) but it bears reminding what some of these are. First, since most of interdisciplinary archaeology is explicitly scientific, that is to say, reliant on advanced scientific techniques and equipment, it becomes clear that interdisciplinarity is only truly available to those countries and institutions that have the economic power to build high-quality labs and train people to use the equipment required. Not only do richer economies have easier access to equipment and experts, they also have more capital to expend on research. Thus, it comes as little surprising that interdisciplinary archaeological projects are more prevalent in richer economies, such as Northern Europe or the the USA, while virtually absent everywhere else. According to a paper by Quirin Schiermeier in *Nature* (2020), in the last Horizon 2020, a large-scale funding programme for research initiatives, out of the €60 billion funds, 40% were shared by “the EU’s three biggest economies: Germany, France and the United Kingdom”, whereas “Poland, Slovakia, Bulgaria and Romania were among the least successful participants, securing a combined total of just over €1 billion”.

The second disadvantage is epistemological: while postprocessual archaeology did, in fact, create diverse mutually exclusive ways of understanding the past (see Kristiansen 2004), the interdisciplinarity practices of today are doing the exact opposite. They are reducing archaeological interpretation to two or three oversimplified epistemologies. Take the study of proxies as an example: archaeological proxies are only possible when elements that are quantifiable are available because proxies have to be represented numerically. Thus, aspects of the archaeological past that cannot be quantified have been ignored by most interdisciplinary archaeology, aspects such as ritual and religious beliefs, identity and personhood, social institutions, agency, etc.

For some scholars, the advantages outweigh the disadvantages: interdisciplinarity has granted archaeology resources, experts, and popularity. For other scholars, the disadvantages outweigh the advantages, in the sense that if we proceed in conducting interdisciplinary archaeology as it is understood today, we will be sacrificing

the countless ways we can practice archaeology. That is the irony of interdisciplinary archaeology; it simplifies and narrows down how archaeology is practiced. In order for archaeology to accommodate the many scientific disciplines that contribute to it, archaeology has to gradually eliminate those elements that the natural sciences do not make use of.

The New Status Quo or the New Buzzword?

Rather than truly identifying the connection of archaeology with other disciplines, both natural science and humanistic, "interdisciplinary" archaeology and its cognates seem to work as a buzzword that identifies the type of archaeological research that is scientific, expensive, and fast (see Cunningham and MacEachern 2016). Some critiques and suggestions about how to proceed with interdisciplinary research have already been put forward. However, archaeologists have only barely scraped the surface when it comes to discussing the theoretical, political, and historical implications of interdisciplinarity.

The papers included in this special issue are a result of a session on interdisciplinarity organized by the authors at the 2020 EAA annual conference. What we are aiming for with these papers is more than just critique of the current *status quo* in archaeology: we want to find ways in which archaeology could improve its inter-, multi-, cross- and transdisciplinary practices. To start off, Alexandra Ion discusses the idea that not all data is translatable from one discipline to another, and that many disciplines have different ontological perceptions of their data. Instead of the transfer of data between different disciplines, it might make more sense to recognize interdisciplinarity as a "trading zone", a flexible context where new knowledge can be produced. Liv Nilsson Stutz approaches the concept of interdisciplinarity in light of the "Third Science Revolution" in archaeology, pointing out that this way of engaging with archaeology ultimately marginalizes the humanities, which in turn could have very long-lasting and detrimental effects on the discipline. Nilsson Stutz describes how the neoliberal university has developed an obsession with output and productivity, which are threatening a truly rich and engaged form of practicing archaeology. In his paper, Tim Flohr Sørensen contends that interdisciplinary research should actually be highlighting the radical differences in terms of ontologies, epistemologies, research designs, and definitions of various disciplinary contexts. Sørensen relies on postmodern eclecticism to highlight how this approach allows for the perception of the multiplicity of epistemologies when engaging with archaeology. In her paper, Torill Christine Lindstrøm points out that interdisciplinarity is perhaps best recognized as a continuum or a spectrum, where in one end of the continuum, disciplines are very connected, and towards the other end, the disciplines are very disconnected. She argues that what we qualify as "interdisciplinary research" in archaeology fall somewhere between the ends of this continuum. Lindstrøm also points out that the different methods that archaeology could make use of are more complementary than we assume at first, and that they can be "mixed" with archaeological practices fairly easily. Daniël van Helden points out that many of the issues surrounding interdisciplinarity in archaeology concern communication. At the base of cooperative practices there is the real issue of cultural differences, of concepts having vastly different meanings depending on the disciplinary context. Van Helden emphasizes the importance of those who translate between disciplines. Finally, Artur Ribeiro outlines the epistemic limitations of interdisciplinary practice. Instead of interdisciplinarity, he suggests for archaeology the methodological anarchism of Paul Feyerabend, which would provide archaeology a more flexible and transgressive mindset towards research.

In general, all of these papers aim at establishing more flexible, equitable, and richer ways of pursuing archaeology. The idea is not to argue that interdisciplinarity in or for archaeology is something either good or bad, but to expand our ways of understanding the past, all through multiple disciplines and forms of knowledge. Additionally, what is more important is the attitude inspired by these papers. Rather than just accepting the way things are or to fully embrace our own ideas, we argue for an archaeology that accepts the attitude that things can be improved.

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Boundary Identities: Rethinking Interdisciplinarity in Archaeology

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Boundary Identities: Rethinking Interdisciplinarity in Archaeology

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Abstract

In this paper I focus on the way in which identity is framed in the context of multi-disciplinary work and explore this concept alongside that of interdisciplinarity. The reason for doing so is that many multidisciplinary studies claim that they are interdisciplinary, which they are not. But interdisciplinarity remains a desideratum. When trying to combine different datasets, there are several challenges inherent in the fact that the data are very different in nature: (1) each discipline might have its own ontological reading of the studied object, and (2) the scale the data operates on differs. Thus, instead of viewing interdisciplinarity as a framework that can integrate different strands of data, a "meta-model" that can be applied across cases, I propose that the solution is to see interdisciplinarity in looser terms as the creation of "trading zones," to use Peter Galison's concept. As an example, I will focus on the use of DNA data alongside other kinds of data when trying to reconstruct past identities.

Keywords

Identity, aDNA, archaeology, interdisciplinarity, trading zone

Zusammenfassung

Dieser Beitrag konzentriert sich auf die Art und Weise, wie Identität im Kontext multidisziplinärer Arbeit gestaltet wird, und dieses Konzept wird zusammen mit der Interdisziplinarität untersucht. Der Grund dafür ist, dass viele multidisziplinäre Studien behaupten, dass sie interdisziplinär seien, obwohl dies nicht der Fall ist. Dennoch bleibt Interdisziplinarität ein Desiderat. Bei dem Versuch, verschiedene Datensätze zu kombinieren, ergeben sich mehrere Herausforderungen aus der Tatsache, dass die Daten sehr unterschiedlicher Natur sind: (1) jede Disziplin könnte ihre eigene ontologische Lesart des untersuchten Objekts haben; (2) der Maßstab, auf dem die Daten wirken, ist unterschiedlich. Anstatt Interdisziplinarität als einen Rahmen zu betrachten, der verschiedene Datenstränge integrieren kann, als ein „Meta-Modell", das fallübergreifend angewandt werden kann, schlage ich vor, dass die Lösung darin besteht, Interdisziplinarität in einem weiteren Sinne als die Schaffung von „trading zones" zu sehen, um das Konzept von Peter Galison zu verwenden. Als Beispiel konzentriere ich mich auf die Verwendung von DNA-Daten zusammen mit anderen Datenarten, wenn es darum geht, vergangene Identitäten zu rekonstruieren.

Schlagwörter

Identität, aDNA, Archäologie, Interdisziplinarität, *trading zone*

Introduction

In a recent paper Joanna Brück (2021) analyses the relationship between identity and ancient DNA narratives. While researchers have already critiqued the use of genetic data to reconstruct cultural or ethnic identities (see Hofmann 2015; Heyd 2017; Furholt 2019), Brück focuses on the role of these data for the reconstruction of prehistoric kinship systems. By using anthropological insights, she points to the fact that kinship can take many forms around the world, which need not be grounded in biological relatedness. Her argument is valid, but I think we can take it further: how can we incorporate different strands of data in order to imagine past identities?

In this paper I would like to focus on the way in which identity is framed in the context of multi-disciplinary work, and explore this concept alongside that of interdisciplinarity. Without delving too much into details, as there is already a consistent body of literature on this (see Klein 2010, but also Jacobs and Frickel 2009), I take as a point of departure Julie Klein's distinction between multidisciplinarity – "the juxtaposition of disciplines. It is essentially additive" (Klein 1990: 56) – and interdisciplinarity, which is supposed to be an integration of various datasets from different disciplines. In archaeology we mostly see multidisciplinary studies, although interdisciplinarity remains a desideratum (see also Ion 2017).

How can we make different datasets work together? Should we even attempt to do so? I propose that the solution is to see interdisciplinarity in looser terms as the creation of "trading zones," to use Peter Galison's concept. I take as two premises the fact that science works best when it is "disunified" (Galison 1999) and that each discipline – archaeology, genetics, isotope studies, cultural anthropology – brings their own ontological commitment to the table. If we want to obtain a complex, nuanced interpretation of past identities we can employ the metaphor of trading zones:

> "in the highly local context of the trading zone, despite the differences in classification, significance, and standards of demonstration, the two groups can collaborate. They can come to a consensus about the procedure of exchange, about the mechanisms to determine when the goods are 'equal' to one another. They can even both understand that the continuation of exchange is a prerequisite to the survival of the larger culture of which they are part." (Galison 1999: 146)

Group Identities in Archaeology

In the ancient DNA papers that Brück refers to, we see different kinds of data brought together to answer the question "who were people X whose remains were discovered at site Y?" The interpretations offered in the papers tie individual skeletons to a group. This group can be: (a) a genetic population – individuals bearing haplogroup X; (b) a cultural population – Starcevo-Cris / LBK / Gumelnita individuals; or (c) kin / a family. New methods that can contribute to creating an individual's profile – genetics or isotopic studies (what food someone ate, the water they drank, where they were from) – have now been added to the toolkit from which archaeologists can choose when interpreting past identities.

As an example, in a 2015 article by Montserrat Hervella and colleagues, several individuals discovered at the Neolithic site of Cârcea in Romania were selected for sampling. Along with others from the sites of Gura Baciului and Negrileşti, these comprised the "Early Neolithic" sample. Then they were grouped in

> "four European haplogroups (H, HV, J and T1a) (Table 2). The haplogroup H is the most frequent in the present-day European populations and the haplogroups J and T1 are suggested to be as markers of the Neolithic diffusion from Near East [5]." (Hervella et al. 2015)

Cultural identities are drawn based on material cultural similarities, while kin relations can now be based on genetic data, corroborated with proximity. For example, at Pietrele-Gorgana, a Late Neolithic-Eneolithic site in Romania dated between 5200–4250 BC (Hansen 2015), in one of the areas (surface F) among the debris of a burnt dwelling were found the remains of nine individuals. A subsequent DNA analysis revealed that they were biologically related (Wahl 2008, 2010). The interpretation then was that these were part of a family "caught by fire and killed under the debris" (Hansen and Toderas 2007: 13).

However, bringing together genetic data and cultural readings has only exposed the cracks in the theoretical toolkit when it comes to imagining identities in archaeology. At least in the beginning, most of the genetics and isotope papers employed a cultural archaeology approach to identity (Heyd 2017). This model has deep roots in the history of the discipline. In the old days of the cultural-historical paradigm, the observable patterns in material culture were grouped in clusters identified with "cultures," and it was assumed that archaeologists dealt with races, types, and ethnicities. When these ethnicities came into contact with each other, they would transmit cultural elements through diffusion and acculturation. This would have been seen as a historical reconstruction, and in this way the patterns in the data were explained. Later on, processualist authors answered the question of who past peoples were by focusing on societies functioning as systems in which certain cultural expressions played a role in terms of functional adaptation or symbolic representation of the social persona. Post-processualist research critiqued the idea of clear-cut boundaries, and brought forth the idea of constructed and performed identities. As a consequence, certain topics (migrations, change on a large scale) fell out of general interest, while the focus moved to the individual or small scale (see Trigger 1989 for an in-depth discussion of all these interpretative models and Barrett 2021 for a more recent review).

But now, with genetic or isotopic data, the interest in migrations alongside the access to large sets of individual profiles from across the continent again bring the question of identity to the fore. The challenge I see is how we frame collective identities in these narratives, what kind of imagined communities do we end up with, and what are the relationships between them (see also Ion 2020 for a discussion of prehistoric materials)?

Identity can mean many things – your sex, your gender, if you have blue eyes or dark eyes, your skin color, whose child you are, what family you belong to, or what ethnicity or religion you subscribe to. Some are physical characteristics, others are performed. There is also a new set of literature focusing on relational identities (Fowler 2016; Crellin and Harris 2020; Brück 2021). Each of these elements can place you in a "group." Through time your identity might change and shift. Genetic analysis, osteology, cultural anthropology, isotope studies, and so on each have their own ontological view ascribed to a person's identity. So how can we make these different datasets work together?

I take two examples where the authors propose successful models and which share the same approach: a multi-factor analysis. The first is a paper by Claudio Cavazzuti and colleagues (2019) on "Flows of people in villages and large centres in Bronze Age Italy through strontium and oxygen isotopes." Here they used one kind of data to calibrate the rest. The team brings together geology, isotopes, funerary data, space/distance, and social identities in order to interpret mobility and dietary patterns in three prehistoric communities. The way this works is by reflecting on each factor through the lens of the others. For example, the concept of local is calibrated by looking at (1) space in km, (2) space at a human scale – space is divided between close proximity/more than a day's walk, (3) cultural markers of identity – funerary customs, and (4) diet. In turn, diet and isotope signatures are linked to spatial distribution maps on a wide area (50 km) and to cultural readings of these data:

> "Theoretically, an incidence of 'exotic' food might also have an impact on isotopic ratios. It seems unlikely, though, that Bronze Age communities in Northern Italy traded in staple food, considering the high production capacity reached by intensive agriculture [11,111]. More plausibly, in this historical phase, strontium isotope ratios reflect the movement of people and not of the vast majority of the ordinarily consumed food." (Cavazzuti et al. 2019: 44)

Another example is by Martin Furholt (2019), where different parameters work in parallel and create a continuum. Furholt uses a polythetic approach inspired by David Clarke to provide a more refined interpretation of DNA data, archaeological data, and the migration grand narratives, applied to the case of 3rd millennium European materials. As Furholt rightly highlights, social phenomena cannot be treated as being homogenous and a coherent unit. Instead, in Furholt's (2019: 1) words, "A unit would thus be defined by a frequent but variable co-occurrence of a set of traits present in its individuals, not excluding their occurrence in other units." For this, he breaks down different cultural traits, such as type of burial, position of the body, orientation, gender, types of material culture, distribution map of archaeological traits, and distribution map of genetic traits. All of these are then analysed through the lens of "social integration" strategies and mechanisms of change (Furholt 2019: 10).

More recently there have been other attempts to shift between scales of analysis and types of data which offer refined arguments (Gregoricka 2021; Novak 2022; Yasur-Landau 2022).

Towards Interdisciplinarity?

Both of these examples are viable options when trying to move towards an interdisciplinary approach, one that in a fruitful way can use the multiple strands of evidence available. But there might be two main challenges inherent in the fact that the data are very different in nature: (1) each discipline might have its own ontological reading of the studied object; (2) the scale the data operates on differs. For these reasons, when different disciplines meet on the same territory, either tensions or misunderstandings might arise (examples of this can be found in the article on terminology by Eisenmann et al. 2018). In the cases of genetic analysis, osteology, cultural anthropology, isotope studies, etc., each has its own ontological view ascribed to "a person's identity."

In a paper published in 2017 in the *Current Swedish Archaeology* journal, I wrote:

> "It is often taken for granted that interdisciplinarity is valuable for archaeology – but why should it be? [..] concerns are bound to appear given that interdisciplinarity is not a process of spontaneous generation (see Klein 1990:116) resulting from putting together archaeologists, geneticists and others. Rather, this should be understood as a synthetic process, in which 'individuals must work to overcome problems created by differences in disciplinary language and world-view' (Klein 1990:188). Surprisingly though, it seems that precisely this complex process of negotiation and of finding a 'meta-language' is almost absent at present." (Ion 2017: 177, 189)

At the time, several things were taking place simultaneously: (1) technical and methodological advances in archaeology and the related disciplines (genetics, isotope studies), which were bringing in a wealth of new data; (2) a resurgence of the interest in grand narratives (especially in large-scale migrations); (3) a power play between the disciplines regarding which one draws "the best" picture of humanity's past (see Ion 2017, 2020). In particular, I was interested in the use of aDNA data in archaeology and its challenges. The main point of contention was the way in which different datasets were combined in an overarching narrative, and the fact that this integration rarely led to a meaningful narrative about the past.

Two years later, the question of how we should tackle multiple strands of data in archaeology is more relevant than ever. But we have also seen more refined approaches being introduced (e.g., Cavazzuti et al. 2019; Furholt 2019, 2021; Manninen et al. 2021). Similarly, critical discourses have added valuable observations to the topic (Frieman and Hofmann 2019; Crellin and Harris 2020; Brück 2021; Jones and Bösl 2021). Looking back, I think that the initial concerns I had about interdisciplinarity in archaeology need a more nuanced phrasing and that collaborations are possible if we rethink what we expect from interdisciplinarity.

In current academic discourses there is a trend toward fetishizing interdisciplinarity, both in jobs and grant applications. But as Robert Frodeman writes in his introduction to *The Oxford Handbook of Interdisciplinarity*:

> "'Interdisciplinarity' should not be treated as a shibboleth or a sign of one's advanced thinking. Neither is it an incantation that will magically solve our problems. Interdisciplinarity is simply a means. But to what end?" (Frodeman 2010: xxxii)

Indeed, what are we trying to achieve with interdisciplinarity in archaeology? Going back to the 2019 article, I was rigidly proposing to view interdisciplinarity as a framework that should integrate different strands of data, a "meta-model" that could be applied across cases – a framework of combining different data sets to support an interpretation. Similar perspectives are discussed in the review by Jerry Jacobs and Scott Frickel, who mention scholars for whom interdisciplinarity is synonymous with integration, which in turn can have different degrees of interconnectedness – low, moderate, and high (Jacobs and Frickel 2009: 45). Instead, it might be more fruitful to focus on understanding the concept either as a complex problem-solving strategy or as a heuristic tool of discovery.

In their critical review of interdisciplinarity, Jacobs and Frickel (2009: 47) observe that, "Whether basic or applied, interdisciplinarity is supposed to integrate knowledge and solve problems that individual disciplines cannot solve alone." But how do we define what a "problem" is? We are living in a world that is marked by the effects of globalization, climate change, the Anthropocene, with complex issues created by the new digital and virtual connections. All these redefine the nature of "problem solving." Consequently, our old concepts, taken in isolation, might not work in a complex and interconnected new world. Hence, we need a language adapted to grasping problem solving in complex and intertwined networks, at the crossroads of multiple temporal and spatial scales.

Following Emma Uprichard and Leila Dawney (2016), I would propose that due to the "mess of reality" we should not even strive for achieving this integration in a universal sense. Instead, we can understand interdisciplinarity as taking place in trading zones, where new objects of inquiry are born: boundary objects.

Uprichard and Dawney convincingly wrote that by trying to integrate datasets we might actually end up with a Frankenstein-like creature:

> "After all, we tend to assume that one method depicts one part or aspect of the object of study and if another method presents a different part or aspect, then the methods have together shown different parts or aspects of the same thing. But what if one method captures the 'ear of the elephant' and another method captures the 'tail of a mouse'? What if mixed methods, very successfully, capture multiple aspects of multiple parts that are entangled together instead of revealing some (singular) 'thing' as 'more' whole?" (Uprichard and Dawney 2016: 22)

Instead, we might rethink interdisciplinarity and see it as a point of convergence, where interpretation and speculation meet strands of datasets and empirical objects and where boundary objects are born. But how can we achieve this? Philosopher of science Galison (1999) compared scientific collaborations to encounters between different anthropological cultures. Exchanges can take place in trading zones, similarly to how anthropological cultures manage to agree on rules to exchange goods or ideas (1999: 138). By coming together, different disciplines can work towards rethinking the object of study.

In order to find ways of thinking about successful collaborations across disciplines, Susan Leigh Star and James Griesemer introduced the concept of boundary objects: "objects which are both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet robust enough to maintain a common identity across sites" (1989: 393). But what is interesting about this concept is that it does not require consensus, according to them. Each discipline can retain its own reading of a particular object, but there is room for cooperation and exchange between disciplines: "boundary objects, like marginal people, exist at the intersection of two (or more) disparate social worlds without fully belonging to any of them" (Star and Griesemer 1989: 411). Under the term object one can find people, concepts, material culture objects.

Philosophers of science have written extensively about epistemic confrontations and ways of dealing with ontological differences. Alison Wylie talks about one such epistemic confrontation, which affects the "substance of the science" (Wylie 2015: 196), namely collaboration with indigenous communities. When it comes to contentious issues or relics that involve local or descendant communities, researchers often hold scientific worldviews as being the only legitimate knowledge about the topic in question. In her analysis, Wylie talks about a project involving Champagne and Aishihik First Nations (CAFN), a project meant to analyse the remains of a young man discovered in northern British Columbia in 1999. In this case, different kinds of knowledge and perspectives of the given topic were proposed.

Through her example, she showed how different kinds of knowledge can inform each other and model research agendas. In this case, the existence of different ontological framings of the subject led to the creation of a collaborative practice, a "dynamic pluralism" (Wylie 2015: 196). Contrary to other cases that Wylie labels as "limited cross-fertilisation," where non-archaeological interpretation and knowledge were added on to the scientific text and did not affect the episteme, this was a true "epistemic engagement." By this she means an encounter that affected both parties and led to reflexive engagements on what constitutes expertise and how this might drive or enforce the research agenda. In the particular case she is discussing, DNA tests on human remains belonging to a native community corroborated oral traditions regarding identity ties between inland and coastal communities, and specialists and non-specialists worked together towards a narrative that was meaningful for both parties.

Such epistemic collaborations take many shapes, but they can even lead to a critical rethinking of archaeological practice, as in my own previous experience (Ion 2016). In that case, osteologists were called in to analyse the bones of a bishop killed by the communists in order to turn him into a martyr saint. While for the community in question and the Church his body was a testimony of the sufferings and the choices he had made in virtue of his faith, a lived and experienced body, the osteological report was focused on identifying the signs inscribed on the bones to point out traces of past agencies in the materiality of the body. As a participant, this difference struck me, raising the question of how an osteoarchaeologist might be able to better recognize and express humanity through a "procedure or language that would acknowledge it without seemingly losing what is deemed as scientific objectivity" (Ion 2016: 165).

What both these cases highlight is what happens when there are different ontological understandings of what an object of study stands for (in this case a body), and how collaborative projects can lead to a breaking down of disciplinary boundaries (Wylie 2019).

Another good example is that of the microhistorical paradigm which shows us how differences in scale can be mitigated. The term microhistory refers to a historiographic school of thought that focuses on the seemingly unimportant details, the small scale, like a single event, but through this lens it manages to recover the *Zeitgeist* of a wider context. Among its most famous proponents were Carlo Ginzburg, Giovanni Levi and Natalie Zemon Davis. These authors shared an interest in the discontinuous and heterogeneous, a special attention given to narrative devices and a focus on context (Ginzburg 1993). Microhistorians offered ways of moving between scales of analysis, between local contexts and global issues. At the same time, they manage to ground their narrative in local contexts, avoiding what Lara Putnam (2016, cited in Ghobrial 2019) calls the risk to gloss over the local in favour of connections.

While microhistory has been popular with historians, there are not many attempts in archaeology. However, an echo of their methods is found in agency studies. One example can be found in osteobiographical narratives (e.g., Robb et al. 2019). An example of an attempted biography of an individual comes from a Cambridge medieval cemetery, part of the *After the Plague* project:

> "F958's genetic heritage is completely unremarkable for the region. While higher-resolution scans are ongoing, his mtDNA lineage is H2A, which is extremely common for the British Isles. […] Although the Hospital of St. John may have housed a few paying inmates (corrodians), and a few non-inmates may have been buried in its cemetery, the overwhelming probability is that F958 was an inmate of the hospital. How might he have ended up there? The hospital housed a heterogeneous population, including a mixture of young, chronically ill people and older people who presumably needed shelter due to a combination of age, infirmity, and lack of family support. It may also have contained a few aged and indigent scholars. We have built a picture of F958 as a robust, physically active person who formerly may have pursued a specialized manual craft or trade, and most of his health problems were common in older age. General indicators of decrepitude—particularly tooth loss, back problems evidenced in stooping, and disability—were recognized as signs of advancing age, for instance in visual characterizations of the later "ages of man" […]. It is possible that he became an inmate of the hospital because of age-related inability to work, lack of family networks, and the resulting indigence rather than because of any specific medical problem. There is no indication of what caused F958's death. […] As a chosen recipient of generous institutional charity in a sea of the urban needy, he must have been seen as deserving and conventionally religious. (This selection, incidentally, gives us some guarantee that his sex and the gender ascribed to him coincided conventionally; it is unlikely that a charitable religious institution would have admitted someone not conforming to gender norms.)" (Robb et al. 2019: 26)

By bringing together data in a story with some sort of temporal dimension, with causes and consequences, and with a link between the particular and the general cultural and social context, the reader is left with the feeling of a better-integrated narrative with a meaningful story. This structure allows for the bringing in of different strands of data and weaving them together into a coherent story. The result is also more than the sum of its parts.

Boundary Objects, DNA and Archaeology

In the previous sections we saw strategies for successful integration of multiple data obtained from archaeological contexts. A human skeleton can become such a boundary object. A tell can be a boundary object. Other examples of boundary objects can be "an assemblage" or "a dwelling," as are concepts such as identity, migration, or time. Each discipline can bring its data and propose a certain reading of each of these contexts. Then, instead of defining interdisciplinarity in narrow terms of providing better-supported interpretations to the questions we already have, we should see interdisciplinarity as tying the lines of data together to generate new perspectives, possible connections, and speculative outcomes. Only when the evidence at hand transforms our concepts and categories and takes us towards finding alternative interpretation might we say we are moving towards interdisciplinarity. This requires crossing our conventional boundaries between objects and between disciplines.

For example, a more fine-grained look at the archaeological evidence from Pietrele paints a more complex story than "a family caught by fire and killed under the debris" (Hansen and Toderas 2007: 13). Genetic data can reveal biological kinship between individuals but can say little about its cultural interpretation or about why those

individuals ended up deposited in the dwelling (together). One way forward is to look at the relationship between the bodies and the construction they are part of and to rethink what "tells" or "burnt dwellings" are. Thus, an alternative interpretation that I have suggested elsewhere (Ion 2020) was that what we have here is a group of individuals, a burnt dwelling, a tell, and a series of fragmentation practices linking material culture and human remains. Each of which could only be interpreted in relation to the other. We know that not all remains are present, with "a striking lack of cranial and leg bones (harder to destroy), not all human remains display heat marks from the presumed fire, some bones were found outside the dwelling, and a chisel made of a human bone found among the remains" (Ion 2020: 364). This suggests intentional selection and deposition of material. At the same time, numerous studies have associated the intentional burning of dwellings with the "ritualized killings" of houses, which are sealed afterwards.

If we look around this context, we find at Pietrele numerous depositions of body parts in "odd" contexts (to a modern eye). One example is a pit on the margins of the tell (dated 4610–4530 BC), L273, which was interpreted as a "mass grave" (Hansen et al. 2012). Here archaeologists found five individuals in "poor health," four of whom were females. One individual showed signs of physical disability. It is not clear from the report if all bodies were complete, but it seems that at least some of them were. At first glance, it looked as if the bones had been placed in a heap. Being layered on top of one another and next to a large deposit of mussel shells might suggest a different kind of ritualized killing – individuals denied the usual funerary rites and instead being "thrown away" on the margins of the tell (boundary). The bending backwards of one of the individuals (the lower legs were discovered first, under them were his thighs, with the individual resting on his stomach – Hansen et al. 2012) might also suggest, based on ethnographic analogies, that it could be an action taken to make sure the individual will not come back.

If we take all these elements together, they start to paint a picture at Pietrele of practices of "unmaking of personhood" (Ion 2020: 364) and the transitioning of people to the status of ancestors, or, on the contrary, to cancelling their memory. More importantly, the human bodies become part of mixed assemblages in a world where there are fluid boundaries between the domestic and the funerary area: a dwelling can become a ritual context through the deposition of human remains and then burning down, followed by the deposition of other material culture. As we have more data, we can unravel more of the threads of the story, going out into the landscape and also deeper into the history of the Pietrele community, each thread opening new questions and avenues of research.

In this case, the concept of identity can be approached from multiple angles: DNA evidence can be used to help shape the biography of the individuals, but to this there is an added layer of cultural readings of those identities, followed by the translation of identities in death and the afterworld.

Final Thoughts

We live in a complex world in which we have come to understand and appreciate the interconnectedness of things, animals, plants, and humans. While social theory and philosophical inquiry have offered us several concepts that can help us grasp these connections, relations, and networks, our methodological toolkit is still lacking when it comes to interpreting past contexts. We find ourselves oscillating between the local and the global, the thing and its context, the assemblage and its network. With the advancement of science, new data come to light, adding new pieces to our interpretation of the past. However, the way in which we combine these various pieces is still a matter of reflection. In this text I proposed that instead of finding ways to fit different datasets which might never fit together, we should accept scientific pluralism. Instead of focusing on the datasets, to rethink the objects we study and place them at the crossroads of these various disciplines. To explore the potential of trading zones and boundary objects as multi-dimensional objects of study that open several venues of research at the same time. Someone's identity is multi-layered and it acquires characteristics depending on the context where they perform. Therefore, framing past identities follows a similar logic and invites us to construct a multi-layered narrative. There is no single path to achieve this, but there are already thought-provoking models available that can inspire us to make different datasets to work together in a meaningful way.

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Rewards, Prestige, and Power: Interdisciplinary Archaeology in the Era of the Neoliberal University

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Rewards, Prestige, and Power: Interdisciplinary Archaeology in the Era of the Neoliberal University

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Abstract

Archaeology has always been situated in a borderland between disciplines. However, in recent years a vigorous debate about the relationships between the humanities and the natural sciences has emerged within the field, warning that with the "Third Science Revolution" in archaeology, the important perspectives provided by the humanities are being marginalised, and that this can have long-lasting and detrimental effects on the discipline. This article critically examines the debate and situates it in the context of the development of the neoliberal university and its impact on research and intellectual work more broadly and identifies the underlying ideologies of ever-increasing research output and quantification as the real threat to an intellectually rich and engaged archaeology, not the natural sciences.

Keywords

Epistemologies, paradigms, power, Third Science Revolution, neoliberal universities

Zusammenfassung

Die Archäologie befindet sich seit jeher in einem interdisziplinären Grenzbereich. In den vergangenen Jahren kam es jedoch innerhalb des Fachs zu einer heftigen Debatte über die Beziehungen zwischen den Geistes- und den Naturwissenschaften. Dabei wird davor gewarnt, dass mit der ‚*Third Science Revolution*' in der Archäologie wichtige geisteswissenschaftlichen Perspektiven marginalisiert werden, wodurch das Fach nachhaltige Schäden nehmen könne. Dieser Artikel nimmt eine kritische Untersuchung der Debatte vor und stellt sie in den Kontext der Entwicklung der neoliberalen Universität und ihrer Auswirkungen auf die Forschung und intellektuelle Arbeit per se. So identifiziert er nicht etwa die Naturwissenschaften als Bedrohung für eine intellektuell vielfältige und engagierte Archäologie, sondern die zugrundeliegenden Ideologien des ständig steigenden Forschungsoutputs und der Quantifizierung.

Schlagwörter

Erkenntnistheorien, Paradigmen, Macht, *Third Science Revolution*, neoliberale Universitäten

Introduction: We Have Never Been Monodisciplinary

Addressing interdisciplinarity in archaeology is like taking on its very soul. Throughout its history, archaeology has developed its own methods and built up a unique approach to human history based on the analysis and contextualisation of material culture, but this work has always been situated in a borderland between disciplines. A survey of research papers published in the Swedish archaeology journal *Fornvännen*, conducted by Kerstin Lidén, shows that in Sweden, the use of scientific methods in archaeology dates back to its 18th century beginnings (Lidén 2006). In another paper Christopher Prescott declares that, while archaeology has a strong identity, it is "inherently a borrower discipline" (Prescott 2013: 42), underscoring its openness in integrating theories and methods from other fields. This position between disciplines becomes obvious when we look at how archaeology is categorised within university structures. Depending on the academic culture in different countries, archaeology as a subject

can be part of the humanities, natural sciences, or social sciences. Sometimes this diversity can be found within individual national systems, reflecting different research traditions, and sometimes they can even be found within a single university, reflecting different specialisations within the field itself. It is thus clear that archaeology is not, and never has been, monodisciplinary. It has grown out of and thrived in the fertile soils between disciplines. That being said, with the recent emergence of the "Third Science Revolution" in archaeology, the balance of scientific collaborations has shifted and caused a new debate. Critique has been launched in particular against the work of successful and controversial researchers from other disciplines in the natural sciences, such as David Reich (2018), who from the vantage point of their own disciplines (in this case, genetics) have encroached on the territory of archaeology to tell their story about prehistoric migration, often, according to their critics, without carefully weighing or acknowledging the archaeological knowledge built up over decades of research. It is therefore important to question what lies beneath the surface of this current debate on interdisciplinarity in archaeology, and why it seems to be such a point of contention.

When we discuss collaborations across disciplinary boundaries it is useful to identify the different forms they may take, in order to identify what kinds of collaborations we are seeing and what our expectations are for the field going forward. Building on Marilyn Stember (1991) and Bernard C. Choi and Anita W. Pak (2006), I have outlined these definitions elsewhere (Nilsson Stutz 2018), but to situate this discussion here, I provide a short recapitulation.

The most basic form for disciplinary collaboration is *multidisciplinarity*. The term refers to a model where different disciplines each provide their own perspective and bring their disciplinary expertise to bear on an issue while at the same time staying within their respective boundaries. In archaeology, an example of this type of research would be traditional collaborations with osteologists or palynologists, who add their specialised analysis, often provided in a separate chapter or appendix to a site report or publication, and where the archaeologist is in charge of bringing it all together in a final interpretation. This type of collaboration was common in archaeology in the second half of the 20th century.

Multidisciplinarity is increasingly replaced by *interdisciplinarity*, which refers to a higher degree of integration of perspectives and expertise, where links between disciplines are analysed, synthesised, and harmonised into a "coordinated and coherent whole" (Choi and Pak 2006: 359). Through this kind of collaboration, the interdependent parts of knowledge are brought together, considering different scales of connectedness, resulting in an integrated approach. This kind of higher-level interdisciplinarity characterises most archaeological collaborations today and can be exemplified by the characteristic close cooperation between different specialists, bringing their perspectives into the research design of an excavation project from its conception through to interpretation. The increasing number of co-authored articles in archaeology in the past decades is a clear indication of a shift toward actual interdisciplinarity as a norm for the field.

Finally, *transdisciplinarity* can be considered as an even more integrated level of connectedness, creating an intellectual framework beyond the disciplinary perspectives. This can be exemplified by scholars who, already in their own scholarship, draw on a range of disciplines and allow them to mutually inform one another, or who work with methods developed in one discipline and apply them in another (for example, when ethnography is applied in archaeology). The distinction between interdisciplinarity and transdisciplinarity is somewhat unclear. The distinction has been criticized on the basis that in the end, they both remove "the disciplinary impasses where these block the development of problems and the corresponding responses of research. Interdisciplinarity is in fact transdisciplinary" (Mittelstrass 2001: 497). However, Jürgen Mittelstrass (2001) distinguishes transdisciplinarity by stressing its lasting effects:

> "While scientific co-operation means in general a readiness to co-operation in research, and thus interdisciplinarity in this sense means a concrete co-operation for some definite period, transdisciplinarity means that such co-operation results in a lasting and systematic order that alters the disciplinary order itself." (Mittelstrass 2001: 497)

From an epistemological point of view, this form of collaborative research is easier to conceptualise, as long as every contributor still relies on a specific disciplinary foundation. However, it can become more challenging for a single scholar incorporating this type of scholarship in their work, trying to convey an integrated but still-complex whole. Here, the disciplinary boundaries eventually become difficult to define, as they blend and feed into each other to a point of redefinition or destabilisation. Paradoxically, while we allegedly celebrate the idea of work across disciplines, this kind of transdisciplinarity is not always rewarded, as the researcher may be questioned as

to where their actual expertise resides. Are you an archaeologist? A biological anthropologist? A cultural anthropologist? A philosopher? Or what? Here we start to sense that there may be invisible limits within the definitions of disciplines that resist further expansion outside of the disciplinary box. As I explore the role of power in this dynamic below, I will return to this observation.

Finally, for many, transdisciplinarity also includes a component of incorporating collaborations and knowledge systems that transcend the boundaries of the academy itself to engage other stakeholders in order to try to affect change in society (e.g. Mittelstrass 2001; Nicolescu 2002; Pohl and Hirsch Hadorn 2007; contributions in Hirsch Hadorn et al. 2008; Zierhofer and Burger 2007; Østreng 2010). This dimension is becoming increasingly important to consider in the contemporary political and academic landscape which emphasizes different forms of engagement outside of the university, through activist and applied scholarship. In archaeology we see emerging scholarship relating to ecology, preservation, and sustainability (Isendahl and Stump 2019), sustainable communities (collaborative archaeology), or that address social problems (Zimmerman et al. 2010; Kiddey and Schofield 2011; De León 2015; Hamilakis 2017).

Mittelstrass (2001) stresses that transdisciplinarity is a *practical research principle* and not primarily a theoretical position. He points out that this is an integrating concept that resolves methodological isolation without constructing a "unified" interpretative or explanatory matrix. It makes sense that disciplines exist, since they provide clear organisational and epistemological structures for inquiry, training, and communication; but this setting can also contribute to stagnation. Transdisciplinarity can help existing disciplines deal with such impasses. Usually, these new forms of collaboration do not lead to old disciplines dying and new ones forming. Rather, transdisciplinarity can revitalise the disciplines involved. However, the impact may also be transformative. In anthropology and archaeology, we can see how a bio-cultural perspective for an understanding of humanity crosses disciplinary boundaries in a way that can arguably be viewed as a new explanatory matrix. We can also ask, is transdisciplinary scholarship limited to its immediate "usefulness" in proposing concrete solutions to targeted challenges (climate change, erosion, health outcomes, etc.), or can we claim transdisciplinarity also for intellectual, artistic, and exploratory work? We will return to this below.

Given our history with interdisciplinarity, it is easy to imagine that archaeology should be leading the movement. But when we examine the history of archaeology as a discipline, we notice that the different forms of collaboration and their level of integration have not been consistently improving, but rather have fluctuated over time. It could be argued that archaeology started out as an interdisciplinary endeavour, and over the course of the 20th century became increasingly multidisciplinary as specialisation in research in general drove us into narrower categories of research and inquiry. But, as mentioned above, the multidisciplinary model has its limitations, and we are currently working towards a breaking-down of those barriers, to integrate a more complete and complex perspective in our research questions. As archaeology has moved from multidisciplinarity to interdisciplinarity, the field has shifted. This shift is due to a series of factors that are all related and that all affect the power relationships in the field:

1. a shift toward the natural science disciplines that have a longer tradition of collaborative research practices and that fit well the interdisciplinary model of work. They have also experienced a rapid development of methods that are well adapted to archaeological source materials;

2. a so-called "crisis of the humanities" in a general cultural debate, involving a questioning of the value of research traditions since the impact of postmodernism. These traditions are concerned with the boundary between the acknowledgement of the subjectivity of interpretation and a distancing from hyperrelativism;

3. the development of the neoliberal university, which, through reward systems based on quantification following structures adapted to the natural sciences, stimulates the STEM fields at the expense of other disciplines, especially the humanities.

Taken together, all these interrelated developments – intellectual, political, and economic – have led to a shift in power and prestige within archaeology which has increasingly shaped itself according to a model of the natural sciences in the past two decades.

To better understand what the current debates about interdisciplinary work in archaeology are really about and to allow us to formulate a way forward, this article takes a multipronged approach. By analysing the debate, it examines the positioning and relationships forged by the disciplinary theoretical developments over the past several decades. It then places these debates within a broader context of contemporary political structures. Finally, and using the different concepts for collaboration, it proposes a way to rethink interdisciplinarity in (and through) archaeology in a manner that explicitly challenges the current hegemonic structures.

Pendulums and Wrecking Balls: The Dynamics of Archaeological Debates

As already stated, archaeology has never been monodisciplinary. On the contrary, by drawing on and finding inspiration in other disciplines, archaeologists have developed a large theoretical and methodological toolbox. This dynamic becomes especially clear in an analysis of the internal theoretical debates that have moved archaeology in different directions, often tearing it apart at the centre, while forging relationships with other disciplines through theoretical and methodological interdisciplinary partnerships. This tension has brought strength to archaeology and prepared us for scientific and intellectual collaboration. It has also contributed to internal conflicts, including what Robert Chapman and Alison Wylie recently called "theory wars" (Wylie and Chapman 2016: 7). When reviewing the literature on interdisciplinarity in archaeology from the last decades it is clear that there is a power struggle brewing below the surface. The conflict is often framed by the dichotomy set up by Charles Percy Snow in his lecture on *The Two Cultures and the Scientific Revolution* (Snow 1959; e.g., Prescott 2013; Sørensen 2017a; Ribeiro 2019). Snow critically examined the gap between the humanities and the natural sciences, caused by a lack of shared references and general culture – the result of an elitist educational system that traditionally had overrewarded the humanities at the expense of the natural sciences. The essay proposed an interesting point of departure to discuss the "theory wars" in archaeology, especially since it included a consideration for shifting dynamics of value and status, of ideas about usefulness, and of the concept of literacy across disciplines (cf. Nilsson Stutz 2016).

Epistemological developments of scientific knowledge are often likened to the movement of a pendulum, where the movement back and forth between different paradigms and perspectives moves the field forward. In the second half of the 20th century, these pendulum movements can be tracked in archaeological theory through the relationship of processual and post-processual archaeologies that in different ways built on and complemented each other. At the same time, they were perceived as epistemological polar opposites. Processual archaeology emerged as a reaction against a culture historically-oriented archaeology in the 1960s (Trigger 1989) and embraced modelling and analytical tools from cultural anthropology, computer sciences, and natural sciences. In the 1980s, a reaction developed in the form of the post-processual paradigm. The term is problematic in that it contains a broad range of different theoretical directions, united by what it is *not*, i.e., processualism, rather than by what it is (a broad range of theoretical frameworks loosely building on the insights of postmodernism). In the course of this shift, archaeology (re)turned to the humanities in the 1980s, opening itself to history and philosophy but also to social theory for inspiration and epistemological partnerships, while it simultaneously, and in the spirit of the pendulum, turned its back on the natural sciences. In the years that followed, the oscillation gained in amplitude. Artur Ribeiro (2016) has pointed out that the amplitude of this movement may have been considerably greater in the UK and parts of Scandinavia, where post-processualism had a firmer foothold than in other parts of Europe and the United States. This reminds us that these movements are not everywhere identical, and it may also give us a clue as to why a considerable amount of ink is spilled on the current debate in Scandinavian archaeology journals, while the return of the pendulum toward the natural sciences causes less of a stir elsewhere.

Indeed, following the physical law of pendulums, the pattern was bound to repeat itself – and it just did – with a backlash, a movement in the opposite direction with the "Third Science Revolution" (Kristiansen 2014), which took hold at the beginning of the 21st century. It has been driven by methodological advances in a range of laboratory sciences applied to archaeology, including DNA analysis, isotope analysis, etc. This return to the natural sciences is fuelled by a range of methodological advances, but it also coincides with the so-called "crisis of the humanities." After a golden age in the 19th and 20th centuries, the humanities started to face a crisis often associated with the postmodern critique. It is paradoxical but somehow has become legitimate to claim that the theoretical movement that broke up the unilinear metanarratives in favour of multivocality, postcolonial perspectives, and cultural

relativism made the humanities *less* relevant to understand the contemporary world. At the heart of the critique lies the discomfort with the destabilisation of objectivity, and it has constituted a very successful attack on the humanities in general. In the end, a few years into the new millennium, this critique finally left a lasting imprint on archaeology, pushing it toward the "harder sciences." Now, finally, archaeology – long thought of as a humanist discipline – can produce what is perceived to be more scientific and objective results, and it appears to be a relief to many.

It is interesting to note that, with the Third Science Revolution, the changes in archaeological attitudes were not limited to views on the natural sciences. The theoretical swing could be traced to a deeper dissatisfaction with the efficacy of the postprocessual paradigm. The social theory of the 1990s was often framed in linguistic terms of meaning and significance, with Ian Hodder's *Reading the Past* as a case in point (Hodder 2003). While initially enriching archaeological interpretation, bringing it into a more mature theoretical academic discussion, it often failed to deliver a good fit between theory and sources. At the turn of the new millennium there was a growing awareness that the dominating linguistic frameworks involving ascribed meaning were less effective than theories exploring practice and materiality to understand human prehistory (Nilsson Stutz 2008). This lack of satisfaction with the connection between theoretical models and the archaeological sources as well as the need for empirical grounding have developed further within archaeological theory over the past 15 years. As a consequence, we have recently seen a broader turn toward the material world, resulting in approaches such as symmetrical archaeology (Webmoor 2007; Witmore 2007; Olsen 2010; Olsen and Witmore 2015; Edgeworth 2016) and toward post-humanist perspectives, Actor-Network-Theory (ANT), and Object-Oriented Ontologies (OOO), all breaking away from a humanocentrist processing of the world (e.g. Morton 2017). However, these turns toward materiality have stayed mostly out of the fray of debates regarding interdisciplinarity, probably because its most successful proponents remain identified as "theorists".

Dissatisfaction drives change, but there are different ways to go about it. When looking at the debate surrounding the "Third Science Revolution" in archaeology, there seems to be a common view that we are dealing with a pendulum that has the tendency to be deployed as a wrecking ball (cf. Sørensen 2017b), tearing down everything in its path. However, as we move forward into an interdisciplinary future, I propose another strategy. On closer inspection we note that below the surface of grandstanding in archaeological theory and current archaeological debates, there is a lot of work just happening. To illustrate the effects of this, I propose that we instead use the 1851 experiment of Léon Foucault with his pendulum as a metaphor, where the movement back and forth is complemented by a gradual rotation moving sideways to fill the plane of oscillation. The movement of this pendulum between perspectives gradually fills in the blanks of our knowledge in a manner that stresses circularity over polarity. Thinking back to the development of archaeological theory, this would mean that we have room in our models to keep some of the knowledge we have acquired along the way as we move with the pendulum, and we can acknowledge that we keep coming back to questions, models, and tools we have used before. Instead of destructively crashing into them, we can pick them up and let them ride along with us. A similar argument has been proposed by Ribeiro who has criticized what he calls the fetishization of "newness" in archaeological theory, questioning the notion that archaeology should be in need of paradigmatic change. Instead, he recommends "a culture which prioritizes the quality of archaeological theories regardless of whether they are new or old" (Ribeiro 2016: 146). I could not agree more.

The Current Debate: Revisiting the Two Cultures

Since the turn of the millennium, we have seen first a gradual and now an increasingly sharp return to empiricism, materiality, and, perhaps most important for our discussions here, toward the natural sciences. Different forms of collaboration between laboratory sciences and archaeology have gained in strength and importance, and this has without a doubt yielded important and interesting results and insights enriching archaeology. This so-called "Third Science Revolution" in archaeology is embedded within the development of laboratory-based sampling and methods of analysis, along with big-data mining and hypothesis-driven research design – all core practices in the natural sciences. It certainly constitutes a return to the material dimension of archaeology, with – in an important respect – a widening of the epistemological scope to include more scientific theory. It also relies unavoidably on interdisciplinarity. While this development has found enthusiasm within the field (e.g., Kristiansen 2017), it has

also been vigorously criticized (see below). Before we go any further, we must first ask: are the archaeological sciences useful? If the answer is yes, which I believe it is, our next question must be why there is so much debate about them. Is it really about the science?

The answer to the second question is both yes and no. It appears that, beyond the new data and information, the turn of the field has had deeper impacts on archaeological knowledge production than can be analysed in epistemological terms alone. But in addition to that, and as will be developed below, the debate is also conditioned by political factors impacting university structures and research practices that affect *all* research and where we could identify a common adversary. These layers are all interconnected, but for the sake of clarity I will present them separately.

Epistemological Hierarchies

The first critique has to do with epistemological hierarchies, respect, and flow of ideas within the interdisciplinary model. As the "Third Science Revolution" has taken hold, it should not be surprising that theoretical archaeological reflection has increasingly involved critique. Yet, most of the critique raised in the current debate does not question whether we should be doing archaeological science per se. Note that this is quite different from the postprocessual critique of processual archaeology. Now nobody seriously doubts the value of the data, and everybody agrees that it must be interpreted. It is here, though, that critics point to an insufficiency, a failure to engage substantially with an archaeology informed by the humanities, resulting in a lack of nuance and theoretical depth in interpretations (Sørensen 2017a; Ion 2019; Ribeiro 2019). The valuable synchronisation between methods, theory, and data is lost, and the archaeologist often struggles to get the point across that, with the publication of laboratory results, there all too often remains a lack of problematisation. This critique has especially focused on the interpretations of ancient DNA analyses in explaining prehistoric migrations (i.e., Frieman and Hofmann 2019; Furholt 2019; Ion 2019). Because the methodological developments are so exciting, with great amounts of new data extracted, there is a real risk at the moment that the methodological development overshadows the theoretical work. If we are not cautious, we run the risk of producing a range of data points that are not sufficiently framed by a contextual understanding of past processes (for example, of migrations in the past), of biological or genetic processes, or a deeper understanding of human experience.

This lack of engagement with the humanities side of archaeology is not only a matter of adding colour to the interpretations. The stakes are higher than that. The allure of objective truth that can come with scientific laboratory results has both disciplinary and political consequences. Åsa Larsson (2013) reminds us that all research is and should be a process toward increasingly better insights but that it is never a finalised stable interpretation. When it works, science proceeds by correcting itself, but that does not mean that it is ever reaching a definitive end. If we are to combine science and archaeology, Larsson argues, then we should be scientific about it. She uses radiocarbon dating and the molecular clock as examples where scientific model methodologies have been adjusted after archaeology and palaeontology provided a well-warranted critical response (Larsson 2013: 31). There are also dangers that extend beyond the research field itself. Elisabeth Niklasson points out the risk (and in particular, the political risk) in a false sense of security provided by seemingly objective data. It is not enough, she argues, to simply "add critics and stir" once the interpretation is out there. Since knowledge is produced at a deeper level, that critical mindset must be inherent in the research process. We need to understand that ideology is intrinsic to archaeological knowledge production, not merely "an infiltrator" (Niklasson 2014: 60).

So why do these problems occur at the interpretative level? Some of the challenges may emerge from the problem with academic specialisation. The more we specialise, the more our value as partners in interdisciplinarity increases. But interdisciplinarity does not only require specialisation. It also requires a broad understanding of the complex issues we are tackling. The intersections of perspectives from different epistemologies enrich our understanding, perhaps especially of humanity, interconnected across multiple scales with our material surroundings, wrapped up in a complex, deep, biocultural history. Despite this compelling potential for interdisciplinarity, archaeology often lacks experience in real interdisciplinary work. If we critically examine its oft-celebrated role, we do not always encounter inspirational examples. Despite the lip service given to interdisciplinarity in the 1980s and 1990s, it often appeared as if archaeology – the so called "handmaiden of history" – had found a handmaiden all of her own in the natural sciences, one that should just "do the work and not ask too many questions." Within

the postprocessual paradigm, the natural sciences were not infrequently demoted to deliver data to be interpreted by "archaeological theory." The collaborations often appear to have been multidisciplinary in nature, rather than providing environments for collaboration and mutual learning, sometimes even resulting in the hostile attitudes described by Kerstin Lidén and Gunilla Eriksson (2013) as a "filter" preventing exchange and dialogue. Today, as the natural sciences have regained ascendant status in archaeology and postprocessual perspectives have lost their hegemonic position in the field, archaeology risks bypassing the opportunity to build true collaborative relationships. What we seem to witness is a rather weak relationship between parties who compete over both data and interpretation, rather than build them in collaboration (as noted above, this is especially clear in the often-public debates about ancient DNA research and prehistoric migration). Unfortunately, this means that instead of being in a position of harnessing the true potential of transformative transdisciplinary and collaborative work on equal terms, we often simply see a shift in the positions of power. This is definitively holding us back, but Tim Flohr Sørensen (2017a: 111) has warned that it may also have a longer-lasting impact on the field. If collaboration is replaced by a state where scientific methods are incorporated to a point of marginalising central tenets within the humanities, archaeology may become perhaps permanently transformed at a deeper level.

The Research Process

This deeper transformative effect, touched upon by Sørensen, relates to a less-discussed dimension of the epistemological shift toward the natural sciences, and I argue that it goes beyond the lack of depth in interpretation. This dynamic affects the research process itself. How we formulate research questions, and what kind of answers we value, differs between the natural sciences and the humanities. The natural science approach to building knowledge is crafted around the principle of hypothesis testing. In the 1960s, processual archaeology turned to this approach. It had clear benefits, but it also led archaeology down a path that prevented it from exploring research questions that were not suited for hypothesis testing. Broad and challenging themes emerged with new, important, and exciting questions in the turn to postprocessual archaeology. Foci included ideology, belief systems, values, emotion, ritual, experiences, and so on. While notable exceptions exist, with the "Third Science Revolution" we now see all too often a return to the lower steps of Christopher C. F. Hawkes' *Ladder of Inference* (1954), with more limited inquiry into these dimensions of human life in favour of questions that can be tested and answered with more certainty. Another possible direction is the move toward a "macroarchaeology" that captures long-term changes, perhaps more accurately, but at the expense of the scale of human lived experience (e.g., Perreault 2019).

This shift does not only affect what questions we ask, but also, increasingly, what kind of knowledge and results we value. It is possible that what we are seeing is a culture clash between different traditions of research. In the natural sciences there is value in adding a small piece to the bigger puzzle in order to provide data and results that can later be examined and retested. Here, even a rather modest insight is valuable to share, in order to be re-examined, complemented, or questioned. This is a sound approach to the collective and cumulative creation of knowledge, but it has not always translated well to a discipline such as archaeology, which often seeks to create grand narratives even after just excavating a single posthole. The result is that when scientific data are published in archaeology, they tend to become extrapolated to fit our expectations of a great story, and even if the data are simply not there, we allow the application of scientific methods to convince us that there really is a "there" there.

An example of this is the recent study of projectile points associated with big-game hunting from the 9000-year-old graves of two women in the Andean highlands (Haas et al. 2020). Due to poor bone preservation, the assessment of the biological sex was made using proteomic analysis of sexually dimorphic amelogenin peptides in the tooth enamel. This result, representing an exciting contribution by a novel archaeological science application of a new methodology, clearly associated two women with projectile points and inspired an interpretation of them as potential big-game hunters, a hypothesis that challenges preconceived ideas about the gender division of labour in Holocene hunter-gatherer societies. To test whether or not this would have been a more common association, the team carried out a comparative review of Late Pleistocene/Early Holocene burials in the Americas. Out of 429 individuals from 107 sites, 27 sexed individuals from 18 sites were associated with big-game hunting tools, and of these, eleven were identified as female. However, only three of these eleven are considered strong associations, in that they present a good stratigraphic association with the tools, are securely sexed, and directly dated by radiocarbon on bone collagen. Of these three, two are infants and were not hunters *per se*, leaving but one adult female who may potentially have hunted big game using the tools placed in her grave. Despite all the reservations presented

by the authors in the article, they still conclude that their findings indicate non-gendered labour practices in which women were big-game hunters. Here, the leap between the data and the interpretation is huge, and it is reasonable to ask if this study would have been published in a highly regarded interdisciplinary scientific journal had it not been for the scientific methods it deployed. The will to make this leap in the interpretation might of course be explained by the enthusiasm of the researchers and the desire to problematise gender stereotypes in archaeology, but it may also be explained by a culture that drives us to break through the media filter and collect accolades that translate in the reward systems of the current state of the academy (this will be discussed in more detail below). A more remarkable example of hypothesis testing is the evaluation of the possibility to fabricate and use knives made from frozen human feces (Eren et al. 2019). While these two studies have very little else in common, what they both demonstrate, on different points along a spectrum, is the favouring of scientific protocol and hypothesis testing without taking into consideration aspects such as the symbolic use of artefacts in narrative, myth, and ritual, aspects that, without a doubt, are more difficult to test, but that nevertheless provide important insights into the human past we study.

Stuck on Two Cultures

This takes us to a final observation that regards both the debate itself and how it frames interdisciplinarity. When analysing the debate, it becomes clear that it is situated within an unreflected, narrow understanding of what interdisciplinarity in archaeology is and can be, limiting it to a formulaic dyadic concept of the Two Cultures the humanities and the natural sciences. This unproblematised assumption – in the debate, but also to a large extent within our practices – results in a maintenance of the disciplinary divisions, engages them in a power relationship and an epistemological hierarchy, and most regrettably, cuts off the important influx of ideas from other disciplines that we should include more actively, in particular from the social sciences. From an American perspective, where archaeology is a part of anthropology, itself defined as a social science, this is entirely inexplicable. While there is an emerging push in archaeology to collaborate with the art world, psychology, etc., these initiatives are more often than not seen as exciting if somewhat experimental personal projects, or as creative theoretical insights, rather than for what they are: serious transdisciplinary projects. Going forward, archaeology must break free from limiting our understanding of research collaborations to the definitions of the Two Cultures. We must look to forge new partnerships with the social sciences, but also with the creative fields of art, theatre, literature, and music.

Reward Systems, Prestige and Power

The shift away from the humanities (allegedly in crisis) and toward the natural sciences in archaeology was prompted by exciting new methodological developments, but it was also framed by the emergence of the neoliberal university with its focus on competition, productivity, output, entrepreneurship, profit, and "usefulness" (Shear and Brin Hyatt 2015; Heatherington and Zerilli 2016). This includes "growing symbolic and financial privileges accorded to STEM fields (science, technology, engineering, and mathematics)," at the expense of fields perceived as less relevant or marginal – the arts, humanities, and social sciences (Heatherington and Zerilli 2016: 44; see also Shore and Wright 2016).

> "In the new university, what 'counts' are those things that can be 'counted', quantified and translated as financial returns to the institution. As one Danish minister summed it up, the aim is to speed up the translation of research from 'idea to invoice'." (Shore and Wright 2016: 48)

The productive value of the academy is no longer measured in intellectual work and inspiring arguments and thoughts, but rather in immediately measurable outcomes, for example, effects in society or a breakthrough in media where the framing of the results often is more central than its contents. The pressures on academic institutions are pushed down to individual researchers, who see their value measured in grants, publications, and citation indices, all of which are rigged to favour the natural sciences. All the structures that frame our scholarly work – including granting agencies, publication businesses, and public interest – reward this development and continue to reproduce it. The result is that archaeology today, while still situated in the fertile soils of epistemological diversity between disciplines, is caught in a system that, through an intricate quantification mechanism including impact factors, citation indices and grant funding structures, pushes it toward the natural sciences and does so at a time when archaeological science is experiencing methodological breakthroughs that make this strategy very

palatable. These processes within our field have remarkably tangible effects on the deeper level of the archaeological knowledge production chain, driven by the career games we all are forced to play, and that are highly structured by the cultural values permeated by publication and grant politics. Today, the big grants and many of the most prestigious journals will be rewarding research anchored in the natural sciences (see also Larsson 2013: 30; Ion 2017: 185; Ribeiro 2019: 116). These powerful structures also have a negative impact on experimental and untested research ideas that do not fit into the mould already shaped by disciplinary traditions. To be sure, how individual researchers respond to these pressures depends on their personal ethics, interests, and needs. But individuals' decisions can have very diverging benefits and costs to respective scholars' careers. It is easier to step away from these pressures once one's career and income are secured.

The same processes are at work in the relationships between researchers, scientific publications, and general media outlets. While many academics may claim that they do not care about media attention (some may even find it problematic and challenging), university structures and many leading science publishers operate with a media strategy that aims at breaking through what Larsson terms the media filter. This strategy to break through resides in what Larsson calls *the innate paradox of combining science with archaeology*:

> "It is the *former* that warrants a study being published in prestige science journals and which gives its conclusions gravitas. But it is the *latter* that generates the 'human interest' angle which will allow it to be publicised heavily by the editors and to be picked up by journalists in public media." (Larsson 2013: 29)

It should not come as a surprise to anybody, then, that it is the archaeology that is increasingly dotted by better funded subdisciplines that simultaneously provide access to the most prestigious journals with the highest impact factors and with a media strategy that facilitates the breaking through of the media filter, that gets the most attention (for a more in-depth study of the phenomenon of the scientific economy of attention, see Franck 2002; van Krieken 2019). When sitting down with one's institution's communications or public relations office, one may well face the question: Why should the readers of the *New York Times* care about your research? It may be easier to give a well-received answer if you provide a grand narrative about large-scale migrations or conflicts, or if you can make broad statements about gendered labour in the past, than if you want to problematise and nuance the implications of your research.

What Is at Stake, and Where Do We Go Next?

After reviewing the debate, we can conclude that while the discussion at times might be heated, nobody argues that the natural sciences have no place in archaeology. What we are debating relates more to the ways in which the current "Third Science Revolution" in archaeology tends to shift the positions of power in the relationship, favouring the natural sciences at the expense of the humanities. While this state of affairs might be a product of recent "theory wars," it is more likely linked to a lack of mutual understanding or literacy across disciplines. However, whether it is the theory wars, academic specialisation, or both, they continue to contribute to ideological discourse that distracts us from the underlying structures giving power to the natural sciences. Given that it is valuable to fight back against unnuanced and sometimes wrong or theoretically retrograde – grand narratives, we need to ask ourselves who the real adversary is. The problem we are really struggling with here is not the growing importance of natural science in archaeology, but rather the rise of the neoliberal university. It is the systemic mechanisms that reward and value different forms of research differently that should be targeted, not individual fields or researchers.

So, where do we go from here? If we return to the understanding that archaeology resides in the borderlands between disciplines, we must be creative and knowledgeable enough to build an archaeology that continues to grow and flourish in those interdisciplinary interstices. Viewed in this light, it becomes clear that the internal problems which have to do with the relationships within the archaeological research community can be solved. We can become more literate across disciplines (Nilsson Stutz 2016). Sørensen cautions us not to underestimate the challenge we are facing, stating that it "is not resolved merely by becoming more conversant with the nature of research across the disciplines, as suggested by Snow. Rather, we need to consider the potential that a question, an observation, an object, a fact, are not synonymous concepts in science and in the humanities" (Sørensen 2017a: 108). Achieving the level of literacy that allows us to translate these meanings will require both

effort (see also Lidén and Eriksson 2013) and an overhaul of our education and training of future archaeologists (Prescott 2013: 43). In the meantime, we can all work on removing our filters (Lidén and Eriksson 2013: 18), practice civil discourse, and develop a curiosity for that other side across "the two cultures," be less prestigious, and learn how to collaborate – or choose not to, when the questions we want to pursue are better solved through other processes. These steps are necessary in order for us to deeply understand the different perspectives well enough to develop the potential for transdisciplinary work, both within our own research and in our collaborations.

But to resist the forces placed on us by the neoliberal university, we need to do more than offer goodwill to colleagues across the Two Cultures divide. To try to change the system may be a big, long-term task. We can begin by resisting it where we can. To resist the system will require those of us who are lucky enough to have a secure career to make choices that go against the neoliberal priorities: resist the pressure to maximise output, prioritise readership and fit over quantified prestige when choosing where to publish, build and sustain supportive research communities that explore new and unsupported research ideas, resist the pressures to adapt entrepreneurial goals to projects, and insist on and articulate the value of the humanities and the social sciences. We also need to actively rethink what a new transdisciplinary archaeology might look like. Can we claim the term beyond the usefulness impacts formulated within a neoliberal mindset and apply it to intellectual, artistic, and exploratory work? Maybe it is in this kind of collaboration, when expanded beyond the narrow frame of the Two Cultures to embrace the social sciences, the arts and even activism, where archaeology can have an impact, make a contribution to intellectual debates and be a part of meaningful social change beyond the academy, and truly engage with emerging discourses – including those that call for us to tear down the walls of the academy itself that will matter in the long run.

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Twisted into Form:
Eclecticism and Epistemological Dissonance as a Framework for Interdisciplinarity

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Twisted into Form:
Eclecticism and Epistemological Dissonance as a Framework for Interdisciplinarity

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Abstract

With interdisciplinarity increasingly being emphasised as an unquestionable asset in archaeology and prioritised amongst research funding institutions and university strategists, it may be worthwhile exploring the nature of collaborative research: What are the political mechanisms of interdisciplinary research and how does epistemic dissonance affect collaborative efforts? In this article, I contend that truly interdisciplinary research should be capable of emphasising the sometimes radical differences between disciplinary research designs, ontologies, epistemologies, and definitions of knowledge. To this end, I pursue atmosphere as an example of a phenomenon that can, or should, be studied in a way that attends to epistemic differences, since atmosphere has different implications in different disciplinary settings. I will favour postmodern eclecticism – however *altmodisch* and unoriginal it may seem in the 2020s – as my methodical approach to atmosphere, since it lends itself to a messy and noisy multiplicity of epistemologies and research designs doing justice to the cross-disciplinary concept of atmosphere. The strength of eclecticism is its lack of consistency and stringency, and its capacity for sustaining epistemic dissonance instead of concealing it.

Keywords

Interdisciplinarity, discipline, conceptual dissonance, eclecticism, postmodernism, atmosphere

Zusammenfassung

Da Interdisziplinarität in der Archäologie zunehmend als ein unbestreitbarer Gewinn hervorgehoben und von Förderinstitutionen und Hochschulstrateg*innen geschätzt wird, lohnt es sich, diese kooperative Forschung näher zu betrachten: Was sind die politischen Mechanismen interdisziplinärer Forschung und wie wirken sich epistemische Dissonanzen auf kooperative Ansätze aus? In diesem Beitrag behaupte ich, dass eine wirklich interdisziplinäre Forschung in der Lage sein sollte, die zuweilen radikalen Unterschiede zwischen den Forschungsdesigns, Ontologien, Epistemologien und Definitionen von Wissen verschiedener Disziplinen herauszustellen. Dafür betrachte ich Atmosphäre als Beispiel für ein Phänomen, das auf eine Art erforscht werden kann, ja sollte, die die epistemischen Differenzen berücksichtigt, da Atmosphäre in verschiedenen Disziplinen unterschiedliche Bedeutungen aufweist. Als methodischen Ansatz nutze ich den postmodernen Eklektizismus – wie altmodisch und wenig originell es in den 2020er Jahren auch erscheinen mag –, da er sich für eine chaotische und unklare Vielzahl von Epistemologien und Forschungsdesigns eignet und auch dem fachübergreifenden Konzept von Atmosphäre gerecht wird. Die Stärken des Eklektizismus sind das Fehlen von Konsistenz und Stringenz sowie seine Fähigkeit, die epistemische Dissonanz aufrechtzuerhalten, anstatt sie zu verbergen.

Schlagwörter

Interdisziplinarität, Disziplin, konzeptuelle Dissonanz, Eklektizismus, Postmodernismus, Atmosphäre

Introduction

In this article, I want to argue for a postmodern ethos in the face of the current proliferation of archaeological interdisciplinarity. While often appreciated as an unquestionably benevolent or a necessary progression of archaeology, even raised above criticism, I contend that interdisciplinary relations are subject to a number of understated, perhaps even disregarded, challenges. These predicaments are rarely made explicit in publications of an interdisciplinary nature, but I hold it to be relatively uncontroversial to observe that collaborative efforts are liable to include imbalanced authority and power relations, unevenly distributed research funding, assimilation of academic agendas, standards and methods, and a levelling of epistemological differences. In this article, I focus on the latter: the fact that much interdisciplinary collaboration levels or shrouds the actual epistemological differences and possible conceptual discrepancies that may not be entirely reconcilable, but nevertheless are nested in the encounter between specialists with different epistemic traditions and ways of reasoning. When confronted with such challenges, I suggest that the interdisciplinary setting offers the opportunity to conduct a critical exploration of the concepts that are central to the collaboration. In fact, this charting of conceptual dissonance may even be argued to be *the* constituent qualifier for sound interdisciplinarity and therefore mandatory in order to ensure central epistemological concepts are not taken for granted or assumed to be identical while in fact being different.

Interdisciplinarity can be defined in a variety of ways, and while others have made thorough analyses and outlines of various types of interdisciplinarity (e.g. Huutoniemi et al. 2010; Hodder 2015; Klein 2017; Mazzocchi 2019; Kerr 2020; Díaz-Andreu and Coltofean-Arizancu 2021), a rigid distinction between “interdisciplinary”, “cross-disciplinary”, “multidisciplinary” and “trans-disciplinary” relations and collaboration is not pertinent to my argument in this article. A discussion of these terms is indeed relevant, yet here, I simply refer to “interdisciplinary” in the widest meaning of relations between disciplines. These relations may issue forth as formal collaboration in collective projects, as informal exchanges, or as individual scholars adopting or exploring concepts from other disciplines, including fields that may be described as non-disciplinary or queer-disciplinary.

My aim is not to argue that central epistemological concepts should be aligned or conform to a standardised, shared language, but instead that actual differences may be unavoidable and therefore should be made explicit in interdisciplinary relations. Specialists from different disciplines may not always be able to agree on the understanding of concepts or employ a homonymous vocabulary. I suggest this epistemic and conceptual discrepancy can be the generator of new knowledge rather than its obstacle, moving interdisciplinarity “from simple borrowings and methodological thickening to theoretical enrichment” (Klein 1996: 153), thereby foregrounding “the problem of how meaning is produced, maintained, and deconstructed” (Klein 1996: 153). Following on from this, I believe that interdisciplinary activities – whether between specialists from different disciplines or one researcher bringing together material, theory or methods from different disciplines – should at the very least include a deliberation as to whether research must rest on mutually agreeable concepts or whether the dissonance between these concepts are part of the interdisciplinary engagement, exchange, and enrichment. Thus, I promote the view that attending to – and welcoming – epistemological and conceptual dissonance offers archaeology the opportunity to advance its interdisciplinary strengths: whereas standardisations of concepts and a shared language may make collaboration more expedient or efficient, I argue that academic efforts mature and grow when sustaining, publishing, and taking seriously epistemic fractures and frictions.

In this article, I want to explore the potential theoretical enrichment achieved through the juxtaposition of epistemological differences, which I hold to be compulsory in any interdisciplinary collaboration. My argument is that good old-fashioned postmodernism has something to offer in this context: the eclectic attitude characterising postmodernism has the potential for complementing interdisciplinary regimentation and uniformity by highlighting epistemological discrepancies. I will begin by briefly introducing what I take from postmodernism and its eclecticism, then discuss interdisciplinarity and epistemology, before turning towards atmosphere as an example of a concept in need of an itinerant and eclectic epistemology.

Making the Floor Slippery

Invoking postmodernism, some might respond that this is a tried, tested, and discarded mode of thinking or an unimaginative blast from the past. While I happily relinquish all aspirations to being innovative, I want to be clear that I do not see postmodernism as a unified package of ideas serving as a solution or remedy in its own right.

I doubt postmodernism can even be anything in its own right, least of all a solution. Nor am I looking for a return to postmodernism as an "ideo-praxis" (Bintliff 2011; see also Bintliff 1991; Knapp 1996) or a model through which everything may be processed. Quite the contrary: postmodernism does not qualify as a fixed and applicable "package" or "paradigm" (Engelstad 1991: 504–505; Hodder 1989: 65), because that goes against the very notion of eclecticism and multivocality, which I consider some of the defining traits of the postmodern attitude (see also Hodder 1985; Tilley 1993; Fahlander 2012, 2014). Thus, postmodernism defies the ideal of originality, purity, and consistency, being distinguished instead by "fragmentation, impurity of form, depthlessness, indeterminacy, intertextuality, plurism, eclecticism and a return to the vernacular" (Poynor 2003: 12). As a consequence, the "postmodern object problematizes meaning, offers multiple points of access and makes itself as open as possible to interpretation" (Poynor 2003: 12; also Huyssen 1984).

In this capacity, postmodernism has been portrayed as the end of meta-narratives and grand unifying, homogeneous, objective truths (Lyotard 1984: xxiv; Harvey 1989: 9). Terry Eagleton argues that postmodernists see these modernist truths as a fetishisation of totality, which in effect becomes a way of legitimising these very truths themselves. The consequence of the postmodernist demise of such truths, he states, is that "[s]cience and philosophy must jettison their grandiose metaphysical claims and view themselves more modestly as just another set of narratives" (Eagleton 1987: 194). While this is a call for plurality and multivocality, Eagleton maintains that it is at the same time an invitation to destabilising any common ground, allowing all discourses to become interchangeable but also untranslatable. This criticism, which has also been rehearsed in the archaeological literature, implies that postmodernism is only capable of deconstructing truths, interpretations and conclusions, showing there is no inherent meaning or substance, leading to crippling radical relativity and cultural fragmentation, or plain "intellectual nihilism" (Trigger 1995: 231).

Unless resulting in cultural paralysis, this condition has been claimed to accept all narratives as equal. Richard Dawkins thus contends the whole point of postmodernism is that "anything goes, there is no absolute truth, anything written has the same status as anything else, and no point of view is privileged" (Dawkins 1998: 142). In a similar vein, Eagleton argues that history, in a radical postmodern perspective, becomes a "sheer undecidable text, awaiting the artful orderings of some theorist's randomly selected tale" (Eagleton 1996: 105; see also Hornborg 2006: 27–28). Indeed, it is possible to find such extremes represented amongst some postmodernist writers, and the "anything goes" allegation is of course particularly incisive. However, I contend that it may be mistaken to assume that the end of meta-narratives and unifying truths necessarily results in the unconditional acceptance of *any* statement and in having to consider all propositions and interpretations equally valid. Rather, the cessation of absolute knowledge[1] and grand narratives are, as I see it, more likely to confront us with an even more radical question: "Does *anything* go?"

This question can either be answered by resignation or exploration: either by throwing up one's arms and giving in or by exploring the limits of the possible through conceptual experimentation and empirical speculation. Opting for the latter, I proceed by taking my inspiration from postmodernism in design and architecture. First described as "the new post-modern anti-rationalism" (Pevsner 1961: 236), these fields have been marked by experimenting with forms, colours, surfaces, and expressions typically adhering to different established and distinguishable styles but brought together in one object or a constellation of objects in irrational, paradoxical, or counterintuitive ways. The diversity of styles is often explicit and their origins partially recognisable, reshaped in new appearances, such as columns of classical antiquity being made from steel, wood, or cast plastic in bright colour schemes. While the Renaissance may be said to rediscover the columns of classical antiquity, copying and gently rephrasing them, postmodernist eclecticism takes a leap from the very concept of "column", stimulating the question what we might expect from columns and their use, exploring new potentials. This is achieved through an eclectic approach, meaning postmodern architecture and design become "a juncture where nearly anything is possible" (Jencks 1977: 46). Yet importantly, this hinges on "an eclecticism that goes beyond the pleasant mixing of recent styles – a *radical eclecticism*" (Jencks 1977: 46).

1 It is of course debatable whether the notion of "absolute knowledge" is applicable to archaeology. Given the nature of the archaeological – everywhere and always characterised by absences, fragmentation, vagueness, and occasional tracelessness – we might even consider the idea of archaeological "absolute knowledge" quite absurd.

With its furniture design, the Memphis group, forming around Italian designer Ettore Sottsass, can be said to epitomise such a radical eclecticism within the postmodern attitude. Memphis brought together bright colours, an unusual combination of materials, such as plastic laminate, textile, and steel, and irregular, asymmetrical furniture arrangements, challenging the idea that the primary concerns of furniture design are function and comfort. More than that, by putting different design idioms together through juxtaposition and translation, Memphis made historical references fluid and migratory, and the group sought to rethink conventional understandings of past stylistic idioms, forms of expression, and design concepts (Horn 1986; Radice 1993; Poynor 2003). According to Michele de Lucchi, one of the founders of the Memphis group, "Memphis wants to make the floor slippery. It will be difficult to keep your balance" (de Lucchi quoted in Radice 1985: 10 [my translation]). Tellingly, a critic has described Memphis as "a riot of color and materials that often overwhelmed a piece's original intent, a shotgun wedding between Bauhaus and Fisher-Price" (Pellegrin 2012). Accordingly, Memphis may be stylistically recognisable, while at the same time producing a counterintuitive, perhaps even iconoclastic combination of expressions and references. Otherwise well-defined concepts – function, comfort, taste, beauty, harmony – become displaced, fragment, and merge in new – perhaps freakish – ways. The frames of reference and expectations to central concepts are necessarily also reorganised in the process.

Similarly, I hold an eclectic attitude to interdisciplinary relations to be valuable for questioning concepts in archaeological collaboration and for destabilising epistemological authority amongst the disciplines coming together. In this operation, conceptual eclecticism is pivotal, and I want to emphasise the explicit work on concepts and conceptual understanding as being indispensable, because otherwise, interdisciplinary work risks a watering down of conceptual awareness and critique.

Consider, for instance, how studies of origins, migration, and identity increasingly have been subject to interdisciplinary research strategies over the past decade or so, combining archaeological and linguistic evidence with a host of data from various disciplines in the natural sciences. Such research is undeniably valuable and has – with remarkable speed – brought new results to the table. However, these results are usually published as the synthesis of the product of the collaborative efforts, congesting the various contributions in one homogeneous conclusion. Yet, what happens when empirical observations or the construction of data from different disciplines in the collaboration do not add up? What are the consequences of data sets operating in incomparable or incompatible ways? As Marc Vander Linden asks:

> "How are we to account for this disjuncture between archaeologists' doubts and the apparent certainties of geneticists? Either material culture and genes – and languages for that matter – behave in such alien ways that the interdisciplinary dialogue has to be restricted to those rare cases where all signals match each other; or, as argued here, alternative hypotheses have to be sought by all disciplines." (Vander Linden 2016: 724)

To some extent, this is a challenge in terms of methods and ways of bringing together empirical work, yet disciplinary discrepancies may also present more fundamental, conceptual, and epistemological dilemmas. In this context, it is not enough to merely observe that differences exist, making space for a "relative autonomy between scientific and humanistic research frameworks", where "both sides employ their own theoretical and methodological standards, some are shared, some not" (Kristiansen 2017: 122–123). If interdisciplinary collaboration implies working on a "common ground", it must also involve a consideration of how this ground is constructed and defined.

In the recent expansion of interdisciplinary archaeological studies of migration, it is, for instance, curious to see how "origins" and "identity" have been framed largely with reference to very particular parameters: geographical descent or aDNA profiles (e.g. Frei et al. 2015, 2017; Reiter and Frei 2015; Kristiansen et al. 2017; Furholt 2019; see also Hofmann 2015; Wilhelmson 2017; Frieman and Hofmann 2019; Crellin and Harris 2020). Hence, studying origins and identity may from one perspective make sense by pointing to the geographical place of descent of an individual and the person's genetic profile. Yet, in another perspective, origins and identity are only meaningful with reference to personhood, the sense of belonging, self-identification, performativity, and ongoing processes of negotiating social relations. The notions of origins and identity may thus spell out differently amongst the disciplines involved in these studies, yet the conceptual ground seems to build on an implicit consensus about these terms. While "sharing a common language" (Lidén 2017) and agreeing on the terms used in a collaboration may help getting the job done, it also runs the risk of Procrustean standardisation if genuinely disparate concepts are forceably pushed into a uniform mould.

To sum up, interdisciplinarity is not simply something to be picked randomly from the shelves in the super-market, added to the plate, making for an orderly and neat dish. Nor should eclectic interdisciplinarity be seen as competing with perceived truths, trying to replace existing meta-narratives with new ones. My argument is instead that by increasing awareness of conceptual dissonance and incompatibilities, interdisciplinary collaboration will have to slow down, question its conceptual foundation, becoming humbler by sustaining and publishing differences amongst the partners in the collaboration.

The Powers of Interdisciplinarity

To some archaeologists, debating – let alone questioning – "interdisciplinarity" may seem odd or even passé (for a discussion, see, e.g., Nilsson Stutz 2018: 49). Some might say archaeology depends so fundamentally on interdisciplinary collaboration that it is part of archaeology's DNA; that archaeology emerged as a discipline in the 19th century by forming and advancing interdisciplinary relations, drawing on biology, geology, and anthropology in order to become an academic discipline and not just a form of antiquarianism (see Sørensen 2017 for discussion and further references). Pushing this stance further, it may be argued that archaeology *itself* is interdisciplinary and that external relations are not enough in archaeology; in this perspective, archaeology can only form as a discipline, and realise its potential for knowledge, by integrating biology, geology, and anthropology: essentially, archaeology "depends on all the other sciences" (Watson 1990: 688).

There is no denying that archaeology has always drawn on methods, data, and insights from other disciplines. Several scholars have mapped such relations elsewhere, emphasising different qualities in disciplinary transfers, ranging from considering them helpful to archaeology to seeing them as indispensable. A similar kind of praise of interdisciplinary relations is widely expressed by research funding bodies (Ion 2017: 178; Kerr 2020), and by and large, interdisciplinarity seems to be an indisputable quality in its own right. In announcements of calls for applications, we frequently see how the funding agencies encourage or require proposed projects to be interdisciplinary or to apply interdisciplinary approaches (Sørensen 2019b: 97–98). Yet only rarely do these calls bother stating explicitly the qualities of or necessity for interdisciplinarity. Perhaps even more curiously, the nature of interdisciplinarity is left unspecified in such calls, i.e. what counts as an interdisciplinary embrace as opposed to disciplinary silo mentality. Altogether, it seems, what interdisciplinarity is and what it is good for must be understood implicitly. Yet, is interdisciplinarity understood at all, we might ask, or simply taken for granted?

By extension, we might wonder where the widespread enthusiasm for interdisciplinarity comes from, asking: what is the *justification* of interdisciplinarity? In some segments of archaeology, concepts and ideas from anthropology, philosophy, and critical theory have been treated as magic wands that might recast the scope and identity of the discipline. Other segments have galvanised methods and data from the natural sciences, almost as a Messianic resurrection to answer all archaeological prayers once and for all. I do not dispute the practical usefulness of applying methods from disciplines outside of archaeology to explore the archaeological record, nor do I question the relevance of importing data or theoretical perspectives to assist the production of archaeological knowledge. Rather, my query is the wholesale, uncritical celebration of interdisciplinarity in its own right, but even more so the ensuing careless attitude to the epistemological impact of interdisciplinarity. In short, I question not the usefulness of disciplinary interaction and exchange, but I am curious about how the traffic between disciplines affects understandings of crucial disciplinary concepts.

In her tracing of the origins of the concept of interdisciplinarity, philologist Roberta Frank (1988) stipulates, perhaps teasingly, that its connotations are pleasant and comfortable. Interdisciplinarity, she says, suggests openness, inclusiveness, and democracy as opposed to reservation, narrow-mindedness, and stubborn territoriality. She writes:

> "Unlike its nearest rivals – borderlands, interdepartmental, cooperative, coordinated – 'interdisciplinary' has something to please everyone. Its base, *discipline*, is hoary and antiseptic; its prefix, *inter*, is hairy and friendly. Unlike fields, with their mud, cows, and corn, the Latinate *discipline* comes encased in stainless steel: it suggests something rigorous, aggressive, hazardous to master; *Inter* hints that knowledge is a warm, mutually developing, consultative thing." (Frank 1988: 100)

The question remains what we want interdisciplinarity to *do* for us, but also – more fundamentally – what it *is*. In their introduction to this special issue, Alexandra Ion and Artur Ribeiro ask whether interdisciplinarity has become the new buzzword and whether it is devoid of an inherent meaning, quoting Julie Thompson Klein (2005). Interestingly, Klein herself asks what we should expect of interdisciplinarity and its different forms, implying there is no unified or stable notion of interdisciplinarity. She contends that the scope of interdisciplinary relations is a decisive factor, distinguishing between "narrow interdisciplinarity" and "broad interdisciplinarity". Klein argues,

> "'Narrow interdisciplinarity' occurs between disciplines with compatible methods, paradigms, and epistemologies, such as history and literature. It has a different dynamic than 'broad interdisciplinarity' between disciplines with little or no compatibility, such as sciences and humanities." (Klein 2005: 63)

Accordingly, we should expect disciplinary proximity and distance in research collaboration to have some bearing on the ways in which research questions are conceived and phrased. The more intimately the disciplines border on one another, the easier the transfer of knowledge, methods, and theoretical concerns. The wider the distance, the greater the potential discord and friction.

Is Interdisciplinarity the New Discipline?

In this light, I believe it is paramount to ask what happens to the potential differences between the epistemological frameworks of the disciplines in this collaborative process, especially in the context of Klein's "broad interdisciplinarity". Do differences become negotiated, negated or neglected? Does one epistemology eclipse another? I hold it to be quite uncontroversial to claim that interdisciplinary relations affect disciplinary orientations, and the implication is, of course, that interdisciplinarity is not merely a pleasant, innocent expansion of or addition to existing disciplinary territory. Interdisciplinarity is part of the formation of what "knowledge", "facts", "data", "results", "progress" or "relevance" might mean within various disciplines, what such concepts represent and how they are constructed politically. Consider, for instance, the impact of the scientific research design upon archaeology in the wake of New Archaeology; or consider the ways in which hermeneutics, phenomenology, and feminist epistemologies affected archaeology with the rise of post-processualism. Today, some segments of archaeology never dispute the notion that research must be based on hypotheses and a rigid research design, foregrounding testable analyses upon quantitative data described as objectively as possible. Meanwhile, others would never dream of questioning the idea that knowledge is fluid and culturally contingent, and that "data" will always be the product of subjective interpretation.

Such disparate agendas are subject to waxing and waning cycles of prominence in the struggle for dominating the mainstream of archaeological thinking. It seems to me that this revolves not simply around what is considered worthwhile or legitimate within archaeology itself but perhaps more so about what role extra-disciplinary agendas play in the formation of archaeological disciplinarity. As Ion has argued, these years there seems to be an increasing leaning in archaeology "towards the natural and hard sciences, as a way of grounding the discipline, and of delivering measurable and seemingly objective facts" (Ion 2017: 179; also Sørensen 2017). Furthermore, she observes that archaeology is experiencing a shift from one attitude to another in terms of disciplinary relations, transforming the role and power of components deriving from the natural sciences. Hence, "DNA, isotopes etc. are not merely an annex of the text, but bring/model the kind of questions asked" (Ion 2017: 190). In turn, she contends, "establishing genetic lineages, dispersal models, or diets are not mere means to an end, but they become the main topic of the analysis" (Ion 2017: 190). In other words, illusions of an egalitarian, balanced, and mutually respectful attitude to disciplinary differences must fade, as interdisciplinarity reveals itself to be steeped in the politics of research priorities, negotiations of authority, and confrontations between disparate epistemologies. In itself, there is perhaps nothing surprising, perhaps not even anything wrong, in having to negotiate authority and power in the interdisciplinary relations. However, what Ion implies is that archaeology is facing a silent, understated shift not only in terms of what topics and themes are prioritised, but even more so with regards to the conceptual and methodological frames of reference that come to dominate interdisciplinary relations and define archaeological epistemology.

This deeply affects how research questions are phrased, what research questions are considered relevant, even possible, and what research designs should be applied in the interdisciplinary collaboration. As historian, Joe Moran, phrases it:

> "The term 'discipline' has two principal modern usages: it refers to a particular branch of learning or body of knowledge, and to the maintenance of order and control […]. 'Discipline' in this context suggested a particular kind of moral training aimed at teaching proper conduct, order and self-control. In fact, the very notion of the term as a recognized mode of learning implies the establishment of hierarchy and the operation of power." (Moran 2010: 2)

In light of Frank's, Klein's, and Moran's definitions of "discipline" and "disciplinarity", it may be suggested that the encounter between different disciplines will inevitably have to refer to a preferred order and prevailing discourse in the disciplinary collaboration. Furthermore, the encounter will be subject to the negotiation of the dominant notion of knowledge and epistemic regimes of power. We might idealise, or wish for, harmonious and balanced relations in the production of knowledge in the disciplinary encounter, yet research collaboration is not necessarily as egalitarian as we might hope. Rather, interdisciplinary collaboration is affected by – sometimes even defined by – political and economic discourse, authority, institutional priorities, identity politics, publication platforms, bibliometrics and citation strategy, academic networks, and the loyalties emerging and breaking down in the competition for research funding, jobs, and scholarly recognition.

I am well aware that some might get the impression that I want to purify archaeology, cleanse it of any disciplinary impurities or crossbreeding. This is not my intention. What I propose is that interdisciplinary work can indeed be worthwhile, yet it is paramount that the hegemonies and hierarchies of interdisciplinary relations are made explicit. Above all, I contend that methodological dissonance and tensions should be foregrounded and made transparent in order to avoid epistemological regimentation and a depoliticisation of interdisciplinary knowledge production. One way to sustain such tensions is by paying attention to the differences marking notions of knowledge, data, research results, relevance, and research designs, and by publishing these differences.

Yet, perhaps most centrally, concepts and conceptual frameworks might be a space for increasing the attention to disciplinary dissonance, because the terms we use may sound similar, while sometimes they are in fact used in abysmally different ways. Importantly, this should not compel us to streamline concepts, sanitise them, and make sure one particular definition is made canonical. Quite the opposite. My point in arguing for an eclectic approach to interdisciplinarity is that conceptual differences should be emphasised, made explicit, and scrutinised in confrontations that do not necessarily add up or may not always be resolved. I contend that the interdisciplinary encounter should not merely result in the sum of its parts, but instead lead to interdisciplinary tensions and frictions that make us ask salient epistemological questions of the concepts in use, even when this results in the realisation of irreconcilable differences.

Thin as Air? Atmosphere as an Eclectic, Archaeological Concept

Instead of offering a case study exemplifying my points, I would like to briefly reflect on some of my experience with interdisciplinary collaborative efforts over the past 15 years or so, focusing on the mechanisms of interaction and the conceptual frictions associated with this work. In the mid-2000s, when collaborating with an anthropologist on an article on light and luminosity, I gradually began focusing on the role of atmosphere in the shaping of social relations and the perception of the built environment. While our discussions were cutting across disciplinary boundaries, our article primarily related to contemporary contexts through an ethnographic perspective on atmosphere, studying it through subjective experiences, such as "cosiness", "intimacy", "homeliness", or "hospitality" (eventually published as Bille and Sørensen 2007). However, meanwhile, I was also studying South Scandinavian monumental passage graves built during the Middle Neolithic (their construction conventionally dated to 3300–3100 BCE). Their internal darkness is one of the defining features of these tombs, and I grew interested in carrying out a phenomenological study of how we might try to appreciate the role and effects of this darkness on Neolithic perceptions and use of the tombs.

At the time, I was struggling to translate the notion of atmosphere from the anthropological setting to an archaeological framework, although I had already co-authored an archaeological study drawing on the notion of

atmosphere (Harris and Sørensen 2010). So when co-organising, first, an interdisciplinary local workshop (at Aarhus University, 2010) and, subsequently, an interdisciplinary international conference (at Aarhus University, 2012) on atmosphere, my own contributions to these events did not revolve around Neolithic monuments but concerned contemporary Danish churches (later developed into Bille and Sørensen 2022; Sørensen 2019a). The two events were organised by myself and three anthropologists (Mikkel Bille, Peter Bjerregaard, and Anne-Line Dalsgaard), attended by a host of other anthropologists, in addition to art historians, aesthetic theorists, linguists, cultural geographers, artists, sociologists, philosophers, heritage researchers, political scientists, and architects – but very few archaeologists. In light of this disciplinary gathering of scholars, I began doubting that I would be capable of demonstrating convincingly that archaeology in its more traditional, prehistoric sense would be able to adopt, let alone apply, the concept of atmosphere.

Since the notion of atmosphere has a pedigree outside of archaeology, the challenge would not simply be to convince non-archaeologists of its applicability for the discipline or for archaeology's capacity to add to the understanding of atmosphere more broadly. The challenge was just as much about finding methods for importing atmosphere into archaeology. On a different occasion, I had been confronted not only with doubt but the plain rejection of the notion that archaeology and atmosphere might be combined. At a departmental seminar at another institution, an archaeological colleague, who initially assumed my paper on atmosphere would concern meteorological data from the past, told me there is no evidence for past atmospheres in the archaeological record. So much for interdisciplinarity, you might say. The concept of atmosphere may indeed seem alien to certain notions of what the archaeological might mean, and it may also contradict a key concept within the discipline: evidence. Hence, we may intuitively assume there is no way to turn atmosphere into an archaeological "object". However, if atmosphere is as crucial to social relations, experiences of human and non-human spaces, and the perception of things as many philosophers, sociologists, cultural geographers, and anthropologists maintain, then archaeology cannot turn a blind eye on this phenomenon, since this would simply result in a dehumanisation of the past.

In this perspective, it is interesting to observe how the concept of atmosphere has had an itinerant career, travelling from one disciplinary framework to others: setting out in meteorology and moving across architecture, philosophy, cultural geography to anthropology, until I – successfully or not – attempted its diffusion into archaeology. Etymologically, "atmosphere" describes the layer of gases surrounding a planet (Henckmann 2007: 48), and it has been adopted colloquially as a figure describing the air in a particular place and as a metaphor for the mood or ambience of a social setting. In many respects, there seems to be something slippery and poorly defined about atmosphere and how to understand it, conceptually as well as empirically (Bille et al. 2015; Bille 2019; Bille and Simonsen 2021). Philosophically, it has been described as "mood" or "attunement" by Martin Heidegger (1962 [1927]: 134), as "tempered space" in Otto Bollnow's vocabulary (1963: 230), as "tinctured" or "tuned"' spaces following Gernot Böhme (1993: 121), or as that which "moves the felt body" according to Hermann Schmitz (2011: 257).

Following Böhme, the properties of atmosphere are captured at the intersection of the objective and the subjective and just as importantly issuing forth as a cross-over of the material and the immaterial. Böhme thus argues, in an oft-stated quote:

> "Atmospheres are indeterminate above all as regards their ontological status. We are not sure whether we should attribute them to the objects or environments from which they proceed or to the subjects who experience them. We are also unsure where they are. They seem to fill the space with a certain tone or feeling like a haze." (Böhme 1993: 114)

In this perspective, atmospheres are indeed subjective experiences, which is what I have described elsewhere as the "clause of subjectivity" (Sørensen 2015). When Böhme for instance states explicitly, "without the sentient subject, [atmospheres] are nothing" (Böhme 2013: 3), the consequence is that it becomes impossible for archaeology or any historical discipline to study atmosphere. Hence, one has to be exposed to atmosphere in and through one's own presence in order for that atmospheric experience to be susceptible and empirical. Contemporary archaeology excluded, the archaeological record does not include live subjects or subjective memory, and without these elements, according to Böhme, atmosphere disappears. In this philosophical perspective, atmosphere does not lend itself to becoming an archaeological research topic. So while a host of other topics that were previously considered "immaterial" or outside the reach of the archaeology eventually were included amongst mainstream archaeological themes – e.g. identity, social and political organisation, religion and ritual, power, emotion, and cognition – atmosphere might be pushing it too far.

Atmosphere Beyond Subjective Experience

After a while, I became discontent with Böhme's position, since the "clause of subjectivity" means archaeologists must throw up their arms and ignore a basic human mode of interaction with the surroundings. Needless to say, archaeology's conditions for studying atmosphere will forever be different from those of philosophy, just like cultural geographers, anthropologists, and literary scholars study atmosphere in different ways. Following on from this, the concept of atmosphere will change accordingly: all concepts need to be translated and transformed in order to make sense in new disciplinary contexts. The translation is not direct and straightforward, but takes detours, distorts the "original" concept, and includes perspectives that might be unexpected and queer. For there to be an archaeological study of atmosphere, it needs to include or produce a material dimension – something that generates a friction in space. Here, I am not thinking so much about the production of material evidence, as if atmosphere needs to result in a footprint or a fossil; by "friction" I simply mean a resonance in bodies and material spaces that may become subject to interpretation.

Consider for instance how human geographer Derek McCormack describes atmosphere as "something distributed yet palpable, a quality of environmental immersion that registers in and through sensing bodies whilst also remaining diffuse, in the air, ethereal" (McCormack 2008: 413). Speaking of the palpable, of environment, and of sensing bodies – instead of subjectivity – highlights the material dimension, yet without constituting an archaeological roadmap to atmosphere. Anthropologist Bille is even more adamant in focusing on the material dimension, when he states that the "notion of atmosphere captures the contemporaneity of personal attunement, material culture and sensuous mediations" (Bille 2015: 58). He is critical of approaches that ignore "how atmospheres are dynamic, manipulated, culturally experienced and continually evaluated in people's lives, for instance through negotiating power, gender roles and a sense of community" (Bille 2015: 57). He argues that the dynamics of such negotiations are inherently material and are unworkable without a material dimension. Bille emphasises how "technologies are increasingly shaping our experience of spaces and thus offer new potentials for orchestrating the atmospheric engagement with the world" (Bille 2015: 57). This echoes philosopher Peter Sloterdijk's prediction that atmosphere – in the widest sense of the word – will depend increasingly on technology:

> "The future era will be climate-technical, and as such technologically oriented. It will be increasingly seen that societies are artificial from the ground up. The air that, together and separately, we breathe can no longer be presupposed. Everything must be produced technically, and the metaphorical atmosphere as much as the physical atmosphere." (Sloterdijk 2011: 245)

Moving closer from these approaches towards an archaeological concept of atmosphere, what is important is the consistent presence of a material element, whether as a "co-presence" of subject and object (Böhme 1993), or what philosopher Tonino Griffero terms "quasi-things" within a "pathic aesthetics" (Griffero 2018: 75), or in the form of the palpability and bodiness outlined by McCormack, or the technological negotiations and productions argued in Bille and Sloterdijk.

Still, for there to be a workable archaeological concept of atmosphere, it needs to be more specific about these materialities and about its methodological approach. To begin with, we need to accept that an *archaeological* concept of atmosphere cannot depend on a living human subject, capable of verbalising the experience of atmosphere in writing or oral statements. Accordingly, an archaeological concept of atmosphere is entirely irreconcilable with Böhme's philosophy of atmosphere, yet it still draws on central tenets from his work. Yet in an archaeological perspective, the absence of an explicit subject should, I contend, not be perceived as a loss or deficiency, but as an opening for an emphasis on other aspects of atmosphere. This means I have to gather an array of fragments of arguments and concepts in order to explore the possibility for an archaeological concept of atmosphere. I stress this cannot proceed as picking and choosing at random what is appealing or in vogue, nor is it an opportune embrace of disciplinary concepts as per "anything goes". Rather, through a morphological approach (following Pétursdóttir and Olsen 2018), I have been interested in exploring whether an archaeological concept of atmosphere is possible at all. My approach to archaeological atmosphere therefore combines elements from other disciplines' conceptualisation of the phenomenon, reconfiguring them in a different form.

Primarily, this twisting of atmosphere revolves around de-centring the subjective element, focusing more on the material environment than cognitive processes. This implies that I focus on architecture and infrastructure in order to reconstruct possible bodily movements, physically as well as affectively. Such a reconstruction inevitably

depends on a relatively intact three-dimensional architectural setting, which is why I have explored Middle Neolithic monumental, stone-built passage graves for this purpose. These tombs are in many cases well-preserved and entail an architectural form staging a strong and non-negotiable choreography. However, this does not allow me to make statements about the particular perceptions of atmosphere in these settings; I cannot speak of "cosiness" or "uncanniness", but I can reconstruct movement patterns, infer bodily interactions and sensations, and I can reflect on emergent forms and ecstasies of things, and on materially-affective frictions between body and environment. These are the terms I use to frame an archaeological concept of atmosphere beyond subjective experience (for the applied study, see Sørensen 2015, 2016; see also Harris and Sørensen 2010).

Conclusion, For Now

Obviously, for atmosphere to make sense as an archaeological topic, it has to undergo a transition in conceptual terms. Atmosphere refers to a conceptual pedigree in meteorology, anthropology, and philosophy, but in archaeology it cannot be confined to this background; rather archaeology has to reconfigure it, perhaps distorting or mangling the original content of the concept. It is precisely the idea of an "original content" of concepts that I see as problematic in the academic generation of workable conceptual frameworks, when the borrowing of ideas and approaches are criticised for not being loyal to the original source or context (see also Lucas 2015; Pétursdóttir and Olsen 2018; Sørensen 2019b). Instead, I suggest that our concepts need to remain open to change and reconfiguration in the exchange between disciplinary operations instead of fossilising as robust and lasting definitions. While postmodern eclecticism has been criticised for merely playing with clichés in an ironic fabrication of shallow pastiche figures, I maintain that conceptual transformation must be well-argued and well-defined, yet without being purified or having to subscribe to authoritarian or dogmatic "original content". Citations are important in the definition of concepts, but with reference to eclecticism, citations must constitute a melange of borrowings, impurities, and selections that are meaningful in the particular context of a new disciplinary setting.

The banal conclusion is that "atmosphere" is not the same thing in archaeology as in philosophy, cultural geography, or anthropology, nor is it categorically or clinically dissociated from this pedigree. As a concept, atmosphere cannot be adopted as a ready-made package in one discipline and transferred to another; the transit to archaeology entails a different rendering of its properties and emphases, perhaps staging what some might describe as a conceptual freak show. In this postmodern eclecticism, there can be no loyalty to "original" concepts, meanings, or definitions. Thereby, the conceptual transfer allows for the combination of different elements from various disciplines and traditions, making the concept less monolithic and more ambiguous; the archaeological concept of atmosphere proposed in this article is thus by no means canonical or timeless.

Historically, atmosphere is itself a concept transferred between disciplines. At its core, it is a translated concept, travelling from one epistemological framework to another, yet also travelling from being a physical phenomenon to a metaphor and further to describing a phenomenological experience at the intersection of subject and object, perhaps even transcending this dichotomy. Atmosphere is thus an example that interdisciplinarity implies an instability of concepts and an inherent dissonance. Studying atmosphere in meteorology is different from studying it in philosophy, which in turn is different from its use in archaeology. This does not mean that other disciplinary uses of concepts disappear or become redundant. Rather, conceptual diversity is budding in the process, which increases the epistemological instability across disciplines. The transfer across disciplinary frameworks indicate to me that the concept must be destabilised and adapted to particular uses and needs, whereby it becomes difficult to refer back to a zealous understanding of a "core meaning" or "original content" as the canonical and true signification of the term. Interdisciplinarity, thus, should make things more difficult, less harmonious, engender the questioning of methods, knowledge, results, research designs, concepts, and stage a doubting of any idealised common language, undermining consensus, efficiency, and regimentation.

Similar arguments could be made for other concepts adopted in archaeology, and here I only want to point to some of those I have been working with myself, such as the above-mentioned concept "identity", but also "movement", "phenomenology", "assemblage", "affect", "emotion", "memory", "objects", "agency", or even the very term "archaeology". These concepts have all been subject to redirections and reformulations in order to make sense in the encounter between their uses in archaeology and other disciplines. The conceptual transition across disciplinary settings is not a neutral transfer but altogether carries with it mixtures of transfer, loss, change, and redirection

of meaning. As should be clear, I hold postmodern eclecticism to be an inspirational framework for destabilising the authority of past meanings and significance in order to rethink concepts and make them useful in new contexts.

Emphasising the non-neutrality of eclecticism, however, pertains not simply to the meaning of concepts but also to their potential political consequences. Postmodernism in its most extreme form has been criticised on various grounds, for instance by Jean-François Lyotard (1984: 76), who describes consumerist eclecticism as "the zero degree of contemporary culture". However, while Lyotard – justifiably – sees this as a retirement into ironic distancing, aesthetic ignorance, and political irresponsibility, Ihab Hassan (1983) emphasises instead the postmodern as an "age of indeterminacy", and, as a consequence, as a powerful call for political awareness and accountability. He argues the postmodern is

> "[c]ompounded of subtendencies that the following words evoke: heterodoxy, pluralism, eclecticism, randomness, revolt, deformation. The latter alone subsumes a dozen current terms of unmaking: decreation, disintegration, decon-struction, decenterment, displacement, difference, discontinuity, disjunction, disappearance, decomposition, de-definition, demystification, detotalization, delegitimation – let alone more technical and rhetorical terms, such as chiasmus, lapsus, schism, hiatus, diremption, suture, transumption, idiolect, heteromorph, and so on. Through all these signs moves a vast will to unmaking, affecting the body politic, the body cognitive, the erotic body, the psyche of each individual-affecting, in short, the entire realm of human discourse in the West. We may indeed call that tendency *indeterminacies*, thus recognizing its plural character, which reopens or revokes familiar modes of thought and being." (Hassan 1983: 9)

In short, indeterminacies form a frame of reference for questioning perceived truths and concepts taken for granted. This adds to the understanding of postmodernism as an "incredulity towards metanarratives" (Lyotard 1984: xxiv), and in particular towards the political authority nested in grand narratives reproduced uncritically.

While some might see indeterminacy as compromising epistemic and scholarly integrity, coherence, and clarity, I hold postmodern dissonance to be unavoidable and even desirable in the context of interdisciplinary exchange. The way to cope with the cacophony of conceptual understandings is to mine them unashamedly, pick and choose that which is useful to one's own end, and make the most of it. This is what I hold to be the force of postmodern eclecticism. To be clear, the part of postmodern thinking I seek to avoid is the one confined to citing historic icons and tropes; the tendency to be historicising, nostalgic, and restorative, pointing back in time to older, canonised or immediately recognisable cultural forms (see also Hodder 1990). Following Klein's view on interdisciplinarity, it may be stipulated that eclecticism has no inherent meaning. Hence, the part of postmodernism I find worthwhile is precisely the non-discriminating, wildly speculative, and experimental eclecticism that tries out uses and combinations of the old for the sake of curiosity and creativity; not in order to honour past icons or to be loyal to their "original content", but to see what might happen when they become twisted into new forms. The purpose of interdisciplinarity is thus to disrupt and destabilise: interdisciplinarity *has* to make the floor slippery. It must be difficult to keep your balance.

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Multi-, Cross-, Inter-, Transdisciplinarity – Fact or Fiction? Does Archaeology Need a Hand Blender?

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Abstract

The concepts multidisciplinarity, interdisciplinarity (crossdisciplinarity), and transdisciplinarity are defined, and examples are given. Whether interdisciplinarity is a novel development, a "new buzzword", or a "new *status quo*" is discussed. The examples contrast ideals versus realities, and also show what obstacles interdisciplinary research may meet, particularly regarding publication. Interdisciplinarity is described as a continuum with minimum and maximum ends. Examples of archaeological research, from both ends of this continuum, are offered. It is claimed that, in other sciences (specifically, medicine and psychology), "interdisciplinarity" is neither a buzzword nor a new concept and research strategy. It is, rather, "business as usual", and "*status quo*", and actually, is the case also in much archaeological research. The backdrop for the conflicts regarding interdisciplinary research is described as deriving from conflicts within philosophy of science. Yet, new positive and promising theoretical developments exist, along with new corresponding methodological developments. The conclusion is that various fields, theoretical positions, and methodologies need not compete, but may complement each other in problem-focused research.

Keywords

Interdisciplinarity, transdisciplinarity, theory of science, methodology, complementarity, problem-focused research

Zusammenfassung

Die Konzepte Multidisziplinarität, Interdisziplinarität (Cross-Disziplinarität) und Transdisziplinarität werden definiert und an Beispielen erläutert. Hierbei wird diskutiert, inwieweit Interdisziplinarität eine neuartige Entwicklung, ein „neues Schlagwort" oder ein „neuer Status quo" ist. Beispielhaft sollen idealtypische Vorstellungen mit tatsächlichen Anwendungen verglichen und damit aufgezeigt werden, auf welche Hindernisse interdisziplinäre Forschung stoßen kann, vor allem bei der Veröffentlichung. Interdisziplinarität wird als Kontinuum mit unterschiedlichen graduellen Ausprägungen beschrieben. Beispiele aus der archäologischen Forschung sollen die Extreme dieses Kontinuums illustrieren. Es wird argumentiert, dass in anderen Wissenschaften (insbesondere der Medizin und Psychologie) Interdisziplinarität weder ein Modewort noch ein neues Konzept oder eine neue Forschungsstrategie ist. Interdisziplinarität stellt eher *Business as usual* und den *Status quo* dar; und dies gilt tatsächlich auch in vielen Fällen für die archäologische Forschung. Konflikte, die in der interdisziplinären Forschung aufkommen, resultieren aus konfligierenden wissenschaftstheoretischen Positionen. Es werden neue positive und vielversprechende theoretische Entwicklungen sowie neue entsprechende methodologische Entwicklungen skizziert. Schlussendlich müssen verschiedene Forschungsbereiche, theoretische Positionen und Methoden nicht miteinander konkurrieren, sondern können sich gegenseitig in einer problemorienterten Forschung ergänzen.

Schlagwörter

Interdisziplinarität, Transdisziplinarität, Wissenschaftstheorie, Methodologie, Komplementarität, problemorientierte Forschung

New Buzzwords

In their EAA session in 2020, Artur Ribeiro and Alexandra Ion asked an important question in their presentation titled: "Archaeology and Interdisciplinarity: The New Status Quo or the New Buzzword?" In this paper, my aim is to explore, explain, and hopefully answer this question. The direction of the paper is as follows: I will take you on a "guided tour" starting with defining multi-, inter-, cross-, and trans-disciplinarity; give examples of different kinds of interdisciplinary research; describe it as a continuum; point to difficulties in mixing disciplines; give the background for this situation from the perspective of theory of science; and after this explorative and descriptive "tour", finally, I will suggest methodological solutions, and conclude that: Research should be problem-focused and thus demands interdisciplinarity, – and: yes, archaeology does need some kind of "mix *master*" – a tough hand-blender!

Among the EAA 2020 presentations a substantial number used one of these terms: multidisciplinary, interdisciplinary (crossdisciplinary), and transdisciplinary. These terms, I think, do qualify to be called "new buzzwords". They are frequently used in lofty speeches, such as at the opening of conferences and congresses. You find these buzzwords in research applications and university programs. Like magic formulae they help to elicit research permissions, project approvals, and financial resources.

Yet, it is often unclear what precisely is meant by them. These buzzwords are vague, a bit void of precise meaning. The terms are often used interchangeably, but they do mean slightly different things. *Multidisciplinarity draws on knowledge from different disciplines but stays within their boundaries*. A typical example is an edited book on a particular phenomenon, site, or finding, with chapters written by experts in different fields. An instance of this is a book about the largest highland plateau in Northern Europe, Hardangervidda, located in Norway. The book, *Hardangervidda* (Nyquist 1979), gives detailed and comprehensive descriptions and explanations about Hardangervidda's geology, archaeology, history, botany, zoology, cultural history, climate, etc. Yet, this information is presented in separate chapters, written by experts in the respective fields, with only moderately overlapping themes.

In contrast, *interdisciplinarity endeavours to analyse, synthesize and harmonize links between disciplines into a coordinated and coherent whole, with the various fields giving complimentary insights*. Usually, two or three fields are combined in a single paper or chapter. An instance of this is a paper about a Palaeolithic bird figurine from the Lingjing site in China, where archaeology collaborated with geology and chemistry in order to find out how the figurine was made and *how old* it was (Li et al. 2020). Yet, the analysis stopped there. No experts on symbols and religion were drawn in to explain the symbolic significance of birds, which could have contributed to explain *why* somebody had made a figurine of a bird. The analysis focused on *how* and ignored *why*. If history of religion had been added to the interdisciplinary collaboration, then also the why-question could have been addressed. Unfortunately, in much interdisciplinary archaeological research, there seems to be an "unwritten rule" regarding what disciplines are "permitted" to be combined. This may be due to what combinations are accepted to be presented and published in the, often rather field-specific, journals.

Going a step further, *transdisciplinarity is complementary, and even aspires to go beyond inter-disciplinarity. It crosses and combines many, often quite unrelated, disciplinary boundaries to create a holistic approach*. It focuses on problems that require crossing the boundaries between disciplines. An example is when the disciplines of psychology, acoustics, geology, and religion were combined and integrated to suggest an explanation for the use of sound, and in particular the use of sound phenomena within caves as a psychologically effectful element in initiatory religious ceremonies (Lindstrøm and Zubrow 2014). This merging, mingling, and mixing of fields is close to what Tim Ingold calls going from "complementarity to obviation". Ingold holds the position that we should strive for a collapsing of artificial boundaries between disciplines that should have never existed in the first place (Ingold 2001).

The New Status Quo? Ideals Versus Reality

A hand blender is an electric tool used in the kitchen to cut, mash and blend. If you put in different ingredients, and let them be mixed, cut, and blended long enough, you will not be able to identify the original ingredients

afterwards. They are completely blended into a uniform mass. Now, the question arises: how much do we want various disciplines to be mixed and blended? What are, or how are, the minimum and maximum ends of the continuum, or spectrum, of interdisciplinarity? In the following I will mostly use the term "interdisciplinarity" (also covering transdisciplinarity) since interdisciplinarity is the term used in Ribeiro and Ion's title in their introductory. Is it easy or difficult to work interdisciplinarily? What obstacles may we encounter? I will give three examples of difficulties in interdisciplinary research – illustrating ideals versus reality, facts versus fiction.

I am a researcher at SapienCE, Centre for Early Sapiens Behaviour, CoE, at the Faculty of Humanities at the University of Bergen in Norway. We are a team consisting of archaeologists, psychologists, anthropologists, geologists, zoologists, botanists, oceanographers, climate experts, psycho-neurologists, and more. Our area of research is on the tip of South Africa, close to the sea, with the locations of Blombos Cave, Klipdrift Shelter, Klasies River, and Pinnacle Point Cave; and we primarily deal with the timespan of 100,000–65,000 years BP. The findings are quite astonishing. Some of the most impressive findings are: shell-beads, beautiful bifacial points, engraved ochre, engraved ostrich eggshells, and even a kind of simple hashtag-like drawing in ochre on a stone, and an ochre grinding and processing toolkit (d'Errico et al. 2005; Henshilwood 2007, 2014; Henshilwood et al. 2009). In particular, the engraved ochre and the drawing have received considerable international attention. They are interpreted as, and presented to the media as, proof of very early human higher cognitive functions.

It is obvious that these artefacts cannot be interpreted by archaeologists alone. In order to know what a "cognitive function" or a "higher cognitive function" is, and what brain regions are involved, psychologists, neurologists, and neuropsychologists are needed. In order to explain the bifacial points, which are quite overworked for the function of spearheads for hunting or fighting, explain the perforated shell-beads that must have been threaded on strings, and explain the use of ochre, anthropologists and psychologists are needed. They can suggest reasons why these artefacts exist, basing their suggestions on analogies from other cultures and on typical human behaviours. Therefore, a neuropsychologist, a psychologist, and an anthropologist are part of the SapienCE team.

SapienCE is also dependent on climate experts, geologists, zoologists, botanists, and oceanographers to be able to establish the variations in sea level, climate, wildlife, plant resources, and precipitation during those ca 40,000 years. Their research is necessary in order to fully understand the contexts for the lives of those people who lived there on the tip of South Africa 100,000–65,000 years ago. So, in this project interdisciplinarity is a must. Yet, we struggle a bit with combining information across the fields, as each field is complex and intricate. A greater problem is that journals are mainly interested in publishing articles that are strictly field-specific. That is a challenge! There are not many truly interdisciplinary journals, and those that intend to be, have difficulties finding reviewers that can evaluate interdisciplinary manuscripts. It is my impression that many of our publications until now are kept safely within each of the disciplines' boundaries, a "*status quo*". Yet, in SapienCE we actively collaborate by sharing data and having weekly seminars in order to overcome the obstacles. Hopefully, our ideals will not clash with reality. We are still toiling with this.

An example where interdisciplinary ideals completely clashed with reality was the destiny of a thesis, submitted to another institution, (the names of the institution and the author are kept confidential). The thesis' theme was from classical antiquity, and included history, social history, art, religion, gender issues, neurology, and psychology among its integrated disciplines. It had the word "interdisciplinary" in the title. However, the committee that evaluated it consisted of classical archaeologists only. They turned the thesis down. In their opinion, too many disciplines were involved, and purely classical themes were too little represented. One could say they demanded a conservative "business as usual" and a very strict old style disciplinary "*status quo*". The thesis was rejected. It has not been re-submitted.

A third example of disciplinary narrowness is a manuscript that was submitted to an archaeological journal (name of journal and author is kept confidential). A particular group of Bronze Age paintings, were analysed with methods from psychology and kinetics, and the findings were discussed in relation to that particular Bronze Age society. The reviewers concluded that they found this combination of disciplines very interesting and promising, but still too unorthodox and unusual for the journal, so the manuscript was rejected. Another case of conservative "*status quo*".

What Are the Minimum and Maximum on the Continuum of Interdisciplinarity?

The three examples above indicate situations of conservative and non-innovative *status quo*, and not even "a *new* *status quo*". Only certain disciplines are accepted to collaborate, "those that we are used to", seems to be the rule. New radical interdisciplinary endeavours clash with old conservative obstacles. But fortunately, radical interdisciplinarity is not always countered and met with doubt, resistance, or outright rejection within archaeology. It is sometimes accepted and promoted. And, for comparison, in other fields, despite varying levels of opposition, interdisciplinarity has already been "mainstream" and "business as usual" for many years.

There is an important aspect to interdisciplinarity to consider: One can define it as a continuum with minimum and maximum ends (although not finite endpoints). At the minimum end, the disciplines are already related and connected; at the maximum end, the disciplines have been unrelated and unconnected, but are now used in combination to solve problems that require their combination. I will give some examples.

In a paper within classical studies, the combination of these fields: classical archaeology, classical history, and classical philology, is called "interdisciplinary research" (Østergaard and Schwartz, in press). They state that this is a controversial combination, and that this interdisciplinary combination of fields may have difficulties regarding concepts, taxonomy, and epistemology. However, to me, the combination and interdependency of these fields is rather obvious, and not particularly new or revolutionary. This kind of interdisciplinarity is close to the *minimum* end of the interdisciplinarity continuum because the cooperating disciplines are very close to each other conceptually and epistemologically. Perhaps it qualifies as a "new *status quo*".

In contrast, close to the maximum end of the interdisciplinarity continuum are the following five examples: As early as in 2001, an article was successfully published in which archaeology, history, history of religion, perception psychology, and cognitive psychology were used in combination to analyse how Migration Period animal art, particularly on large gilded brooches, may have been perceived and interpreted by people, and strategically used by the power-elite (Lindstrøm and Kristoffersen 2001). In a similar vein, psychology of perception and neuropsychology were used in an article analysing the concept of *poikilia* as one of several forms of aesthetics in the Greek archaic and classical mind and culture. It shows that *poikilia* was not only a form of philosophical aesthetics, but also referred to psychological states, mythical themes, and even had social consequences (Grand-Clément, in press). A third example: By combining archaeological findings with climate studies, human migration in the Late Pleistocene is found to have been climate dependent (Timmermann and Friedrich 2016). A fourth example is a paper on the digestive and nutritional benefits of cooking tubers (a thickened underground part of a stem or rhizome, a root) – a practice which started in the Palaeolithic. Botany, archaeology, physics, chemistry, and nutrition science were used in the analyses to find out when and why human beings started to and continued to cook their food. This is a habit not shared with other animals. The cooked proteins are easier to digest and must have contributed substantially to the development of the human brain (Wadley et al. 2020). Finally, the fifth example shows that classical archaeology, often regarded as the most conservative field within archaeology, can be enriched by contributions from other fields; yet it may be significant and typical that the report was not published in an archaeological journal, but in a medical journal: An investigation on human faeces from Pompeii which showed that intestinal parasites, as well as other parasites, were a major health problem. It was connected with the popularity of the Roman baths, and with the cosmopolitical contacts between people living in the large Roman empire. This investigation required the interdisciplinary combining of parasitology, medicine, palaeo-parasitology, palaeopathology, zoology, ancient texts, classical history, and classical archaeology (Tanga et al. 2022). In all these five examples scientific fields that are seldom seen together are combined, and these works are close to the *maximum* end of the interdisciplinary continuum. Interestingly, there were no signs of problems regarding theories of science, ontology or epistemology. The collaboration and combination were simply *problem-focused*. In these works, "interdisciplinarity" is a solid and successful reality, irrespective of "fashion", and is certainly not just a buzzword!

Fields other than archaeology already have rather long traditions of interdisciplinary research, both on the minimum and the maximum ends. Medicine, pathophysiology, haematology, and neurology can be combined and called "interdisciplinary research". Yet, as they are all within the discipline of medicine, the combination is on the minimum end of the continuum. In contrast, on medicine's maximum interdisciplinary end, we can find physicians, psychologists, and anthropologists collaborating against HIV. Psychology, like medicine, is inter-

disciplinary by tradition; collaboration with psychiatry and pedagogy is on the minimum end, whereas psychology's combinations with various medical fields (in particular neurology and endocrinology), nursing, and anthropology are collaborations that are on the maximum end of the interdisciplinary continuum. In both medicine and psychology "interdisciplinarity" is neither a buzzword nor a new concept and research strategy. It is rather "business as usual", and "*status quo*". The research is *problem-focused*, in the sense that research methods and theories are not constrained to those that are characteristic and traditional of one field or science, but open to include whatever is required to solve the problem in question.

Buzzwords Meet Philosophy and Theory of Science

The difference between multidisciplinarity and the buzzwords (inter-, cross-, and transdisciplinarity), and the difficulties encountered in realizing interdisciplinarity in research, often relate to the theoretical and conceptual controversies of processualism versus post-processualism in archaeology, paralleling positivism and empiricism versus cultural constructivism and cultural relativism in psychology, in humanistic sciences, and in the social sciences. Processualism and positivism tend to prefer only "hard science"-interdisciplinarity, whereas post-processualism and cultural constructivism favours "soft-science"-interdisciplinarity. This situation is sometimes explained as an incompatibility between the humanities and the natural sciences regarding ontology, epistemology, and methodology – and the contrasts and conflicts between "hard" versus "soft" sciences in general.

Science[1] deals with phenomena that are profoundly divergent and extremely multifaceted. Science regarding humans and human phenomena can be said to have different positions on a continuum ranging from natural laws on one end to cultural relativism on the other. All points on the continuum are intricately interrelated. There is hardly a single human phenomenon that does not have both "natural" and "cultural" aspects.[2] For instance, research on and theories about caries in odontology, includes the physical structure and form of human teeth on the natural, human universal side, and dietary customs and symbolic functions of food on the cultural social constructivist side. Similarly, research on understanding the design and development of Roman amphitheatres, is based on universal natural laws about weight and physical properties of stones relevant for architectural constructions, and the Roman customs of amusement and ideas of religious sacrifice and punishment on the socio-cultural constructivist side. Both natural and cultural perspectives are relevant and necessary for research on dental health and Roman amphitheatres respectively, as both perspectives provide legitimate and relevant data. As Winnie-the-Pooh would say: "*Utrumque*!" ("I'll have both").[3]

"Utrumque!"

The combination of knowledge, perspectives, theories and methodologies from different fields, is irresistibly fascinating. My position is that of Winnie-the-Pooh: "*Utrumque*!" Science should not be restricted by theoretical, methodological, or ideological boundaries. Still, many post-processualists and social constructivists would claim that the two paradigms, processualism and post-processualism (in archaeology), positivism and social constructivism (in the social sciences, humaniora, and psychology) respectively, are conceptually and logically incompatible due to differences in epistemological perspectives, and therefore, a mixing of disciplines is like trying to mix oil and water – ingredients that will not blend, despite a good hand blender.

Yet, there has been a move towards a theoretical union of the divergent positions within archaeology as well. Cognitive-processual archaeology and cognitive archaeology can be suggested as examples for the combination of the two

1 I use the term "science" as synonym for *Wissenschaft* (German) and *vitenskap/vetenskap/videnskab* (Norwegian, Swedish, Danish), as a generic term for all scientific endeavours, encompassing the natural, the humanities, and the social sciences.

2 Despite the outdatedness of the nature versus culture discussion, both lay and learned still tend to use the distinction "nature" versus "culture". Therefore, these terms, and the division they represent, will be used to some extent.

3 "'Utrumque' diceret…." ("'Both' he said…."). Winnie-the-Pooh answered this when he was asked whether he wanted honey or milk with his bread. From the Latin version "Winnie Ille Pu" from the book Winnie-the-Pooh (Milne 1960: 18).

approaches in archaeological studies of the human mind (Renfrew et al. 1993; Fagan 1997). The term "the Synergy Approach", indicating a synergy between processual and post-processual approaches, is suggested by Christine S. VanPool and Todd L. VanPool (1999: 48). They claim that both approaches can contribute to scientific developments in archaeology through "a synergy in which the two programs working together can create a rich and robust understanding of the archaeological record by prompting archaeologists to ask a broader range of questions and to employ a greater number of analytic strategies" (VanPool and VanPool 1999: 48). In the same year, the Middle-Ground Position where archaeological fieldwork was positioned as including both subjective and objective components was suggested by Ian Hodder (1999: 52), who earlier had promoted pure post-processualism. Along this line, but different from post-processualism, one may perhaps include Symmetrical Archaeology (Olsen 2010; Olsen et al. 2003; Witmore 2007a, 2007b), and Materiality Studies (Hodder 2011; Malafouris 2013; Knappett 2014). Emerging from somewhat different lines of thought, unifying positions have been proposed within biology and anthropology as well, with the most radical probably being the Developmental Systems Theory in biology (Oyama et al. 2003) and the interdisciplinary Biosocial Obviation Approach of Ingold (2001: 255–279).

These integrative positions resemble the perspectives in archaeology proposed by Alison Wylie (1994, 2000) and by Robert W. Preucel and Alexander A. Bauer (2001: 93). Wylie (1994) points out that archaeological interpretation may benefit from using multiple independent kinds of evidence and independent analytic techniques. This is a pragmatic, eclectic, multi-methodical attitude resembling the Mixed-Method paradigm in medicine, psychology, and social sciences (Teddlie and Tashakkori 2003a, 2003b). Wylie proposed an even more comprehensive meta-perspective by referring to Ian Hacking (1996) and his claim that all research may have unity on a metaphysical level and, regarding ontology, have a practical unity regarding aims and methods of science, and finally, on a logical level, have a unity regarding principles of scientific reasoning, but not necessarily have unity on a theoretical level. Similarly, Preucel and Bauer have advocated a scientific "unity at the level of logical reasoning (meta-pragmatic level) and disunity at the level of interpretative theory" (2001: 93).

All these approaches and positions have in common that they transcend theoretical, ontological, and epistemological boundaries. One could claim that such a multi-methodical, multi-theoretical position which can be described as pragmatic, eclectic, and "bricolage" has, in various ways, already long been proposed and employed in archaeology (Clarke 1979; Bintliff 2006: xix, 2011: 18–21; Bintliff and Pearce 2011a, 2011b; Pluciennik 2011: 33, 44). Pressing practical problems on excavation sites, or having to interpret unexpected findings, have always demanded pragmatic practical solutions and intellectual inventive flexibility. It has also been argued that this pragmatic "bricolage" eclecticism is *the* new theoretical paradigm in archaeology (Pearce 2011: 84–87).[4] Instead of being paradigmatically monolithic, it is multiverse (Tosi and Pearce 1997) by employing multiple methods and models fitting the investigated *problem* more than defending a particular theoretical *position* (Pearce 2011: 85).

Compete or Complete?

"Paradigm shifts", or at least *conflicts* regarding the philosophy of science, have been, and still prevail, in archaeology. Structuralism versus post-structuralism is an old conflict, but still vibrant. The Third Scientific Revolution, with its natural scientific technologies and methods, is often presented as both a new contribution and a challenge to archaeology. But the combination of natural science and archaeology is already "mainstream" and "*status quo*" in archaeology, as Ribeiro points out (Ribeiro 2022, this volume).

A central discussion, originating in post-modernism's influences on philosophy of science, has been connected to the question of whether science can ever be reasonably *objective*; and following this, to what degree, with what consequences, and in what respect science is *subjective*. This discussion concerns both theory and data, as they are closely interconnected. The traditional view, that data create theories (induction), or that theories guide data collecting (deduction), has been challenged by the idea that data collecting is often "invisibly" guided by undefined or subconscious theoretical or personal viewpoints, an idea that was first proposed within the concept of

4 By "bricolage" *sensu* Lévi-Strauss (1966: 16–22), Pearce (2011: 85) means that one puts together various elements from relevant theories and methodologies in order to fit the problem or phenomenon being investigated.

the "sociology of knowledge" (Durkheim 1954 [1912]). Such viewpoints include values that are embedded within the scientific process without being explicitly formulated or questioned, or unconsciously embedded in the mind of the scientist.

Another ardent discussion centres on research methodology, the advantages and disadvantages of quantitative versus qualitative research. This discussion is particularly focused on whether it is relevant to employ numerical, *quantitative data* and statistical analyses for human mental phenomena that are soft and intangible; and whether *qualitative data* can have reliability and validity and thus can be generalized (have external validity).

Another conflict centres on questions concerning the existence of human universals: whether certain psychological characteristics, behavioural tendencies and social patterns are typical for humans as a species. This question is relevant for the discussion of whether it is possible to make comparisons and analogies between, or generalize findings from, one socio-cultural-historical context to another.[5]

Today, not only the question of whether human beings are primarily to be understood by their nature *or* their culture,[6] but also their "nature and culture", the adding of culture on a natural substratum, are regarded as outdated (at least in medicine, genetics/epigenetics and psychology). The position now is that nature and culture interact and co-evolve in subtle, intricate, and almost indivisible and indistinguishable ways (Midgley 1995; Bandura 1977, 2005, 2006; Buss 2001; Ingold 2001; Berry et al. 2002). Therefore, the behaviour of individuals and groups must always be understood as "action-in-a-context", as individuals, groups and their contexts are to a considerable extent inseparable (Craig 2003).

Furthermore, Ludwig Wittgenstein's ideals of "complementary discourses" (Wittgenstein 2009 [1953]) and of using the right and relevant tools for each particular problem are increasingly winning ground. This attitude is essential in all problem-focused research. Without losing the methodological rigour of processualism, ideas from post-processualism have gained general scientific recognition, and become mainstream (VanPool and VanPool 1999). They have influenced modern archaeology by broadening and refining its range of observation, sharpening the awareness of subjectivity in the process of interpretation, and by making a focus on "context" a *sine qua non* both within archaeological studies, and in the practices and uses of archaeology. There is now a refreshing recognition of qualitative aspects in even the most hard-core positivist quantitative research circles, and an awareness of subjectivity and contextual biases in all kinds of research, quantitative as well as qualitative. Skirmishes still occur, but now seldom regarding the legitimacy of the different positions *as* scientific positions and methodological standpoints, but rather concerning the *relevance* and the potential *ethical consequences* of the different theoretical positions and methodologies for the particular topic being studied.

Hopefully, interdisciplinarity will, from being a buzzword, become realized, and continue to emerge and develop within all branches and fields of archaeology. It is now increasingly recognized that integrative perspectives really enhance research by providing different points of view, different kinds of and levels of information, different methods, different sets of data, and different ways of integrating and interpreting this information, both analytically and theoretically. More varied and different perspectives are increasingly acknowledged as relevant for different research topics and questions, and different research questions are acknowledged as requiring broader methodological approaches. This integration of disciplines also makes new research questions possible to pursue: The fields expand! Also, combinations of methods such as *Methodological Triangulation* and *Mixed Method Research* (Teddlie and Tashakkori 2003a, 2003b; Johnson and Onwuegbuzie 2004) are increasingly acknowledged as

5 This conflict regarding cross-cultural generalizations, in the intersection between archaeology and psychology, was particularly pinpointed by Hodder (1986: 30–32) in his criticism of Colin Renfrew's view of archaeological research regarding the human "mind". Renfrew promotes a position which bridges a natural science-derived and a historically relative point of view. In contrast, Hodder claims that each culture has its own cognitive processes, that Renfrew's position is internally contradictory, and concludes, "It is no longer possible to have a universal natural science theory and method which will allow secure inference and prediction from one historical context to another." (Hodder 1986: 32). Hodder here seems to confuse the term "cognitive processes" with the contents and products of these processes. The products of cognitive processes are culturally determined and influenced. "Cognitive processes" is a psychological construct referring to the cognitive functions of the brain, the human cognitive "share-ware", regardless of content and culture. (Humans even share many cognitive processes with other species.) Whether one learns computer use or bird trapping is culturally determined, but the learning processes (such as model learning and operant conditioning) are the same, and universal.

6 The "nature versus culture" conflict is also termed the "nature versus nurture" conflict.

creating more intriguing research designs and results. Different perspectives and methodologies evidently do not have to *compete*. On the contrary, they may *complete* our understanding of complex phenomena.

Problems? – Oh Yes!

Yet, there may be obvious problems and obstacles to good interdisciplinarity. First and foremost, researchers from various fields may be reluctant to move outside their "comfort zone", for various reasons. To spend one's time and funding on interdisciplinary projects may be hazardous in relation to job demands. "Publish or perish" is a constant threat. Secondly, it can be difficult to understand the scientific concepts and language of other fields. Communication and co-writing can be difficult. The solution is that one needs to study, read up on, and communicate with the disciplines that one collaborates with. There is no short-cut. One must simply expand one's perspectives and knowledge. (My team in SapienCE has frequent seminars, sometimes over several days, in order to enhance communication and understanding). A third problem is that journals may be very discipline-specific and can be reluctant, or simply unwilling, to publish interdisciplinary papers. As we review papers, we have here a great responsibility. We must dare to promote and recommend interdisciplinary papers. All that being said, I will add, from my own experience, that to engage in collaboration with other fields is not only demanding and challenging, but also very rewarding, mind-expanding, fascinating, and simply fun!

Does Archaeology Need a Hand Blender?

Frankly, in my opinion, archaeology is by its very nature interdisciplinary – perhaps *the* most interdisciplinary of all scientific disciplines. Archaeology is, and always has been, dependent on other disciplines to thrive and develop. And it develops further in that direction. A few examples will suffice. In collaboration with medicine, we find out what nutrition prehistoric people had, and what diseases and injuries they suffered. With geology (including tephrochronology) we study how ancient volcanic eruptions happened and what effects they had on human cultures (prehistoric as well as historical); and we can explain why certain stones were preferred for making stone tools. With acoustics we can unravel why certain areas in caves have decorations and signs of cultic behaviours. With zoology and botany we study the natural environment of prehistoric people, their diet, their agriculture and livestock, as well as reconstruct ancient gardens. With linguistics we study migrations and cultural diffusion. With history of religion we interpret ancient sacred locations, buildings, and objects. With psychology we outline what mental and social effects rituals produced. With history of art we date locations and cultural influences. With anthropology and ethnography we make analogue interpretations regarding family life and social organization from house structure to dwelling distributions. With chemistry we identify ancient colour pigments, discover how they were made and what their sources were, and reveal that classical, Greek and Roman, sculptures were polychrome. With numismatics we identify persons of power as well as trade routes, and date sites. With a DNA analysis we examine interbreeding of prehistoric peoples. With history, science of literature, and linguistics we decipher information from ancient texts. With climatology, oceanography, and glaciology we estimate sea levels, atmospheric conditions, and climate in ancient times, the natural contexts surrounding ancient peoples. And this list could go on and on and on.

The hand blender is my chosen metaphor for interdisciplinarity (the term used here to include inter-, cross-, and transdisciplinarity). As I described in the beginning, a hand blender can blend ingredients until their original identity is unrecognizable. That may be an overshot. I do not advocate disciplinary blending until unrecognition. After all, each researcher must take responsibility for the interpretations he or she makes. Yet, I think that the boundaries between the disciplines are still much too rigid. Unfortunately, scientific journals contribute to this situation by requiring field-specific contributions. Yet, archaeology, perhaps more than any other discipline, is by its very nature, an interdisciplinary science. And, as also other sciences do nowadays, archaeology should continue to expand and develop in that direction.

Conclusion

Yet, tensions in interdisciplinarity are obvious. A hand blender has sharp knives. Interdisciplinarity can be challenging, discouraging, demanding, perhaps even destructive. Posturing fights over theoretical issues can be lethal to progress, but can also spur it. Archaeology needs research that is inspirational and inventive. I believe that *a firm focus on the problem to be solved* is a key to reduce the interdisciplinary tensions and provide new inspiration. Problem-focused research will demand "postmodern eclecticism" as proposed by Tim Flohr Sørensen (2022, this volume) and "methodological anarchism" as proposed by Ribeiro (2022, this volume). An expansive, flexible, and pluralistic interdisciplinarity, in various forms, is what can lead archaeology beyond cyclopic single-theoretical and mono-methodological petrifying positions. Yes, archaeology does need a hand blender!

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Let’s Talk About It: The Importance of Communication and Translation in Interdisciplinary Cooperation

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Let's Talk About It: The Importance of Communication and Translation in Interdisciplinary Cooperation

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Abstract

Archaeology is very interdisciplinary in its orientation. Therefore, it presents a good case study for thinking about interdisciplinary cooperation. Most, if not all, problems with interdisciplinary cooperation ultimately reduce to problems of communication. An important part of these is due to cultural differences between academic disciplines. Real cultural differences underlie disciplinary divides, and these shape the ways people communicate. Such cultural differences can cause serious (and difficult to detect) communication problems. With careful attention to communication that is sensitive to disciplinary cultural differences, a lot of problems that are practical in nature but are fundamental to effective cooperative research can be mitigated. The importance of translators in interdisciplinary research teams is highlighted. Archaeology can use its slowly growing experience with intercultural communication to enhance its interdisciplinary effectiveness. In order to reap such benefits, it is important that attention is paid to training and employing people with a broad interdisciplinary basis, so that there are people equipped to fill the important role of translator.

Keywords

Interdisciplinary research, communication, translators

Zusammenfassung

Archäologie ist ausgesprochen interdisziplinär ausgerichtet. Daher ist das Fach ein gutes Beispiel, um über interdisziplinäre Zusammenarbeit nachzudenken. Die meisten, wenn nicht alle Probleme interdisziplinärer Zusammenarbeit lassen sich letztlich auf Kommunikationsprobleme zurückführen. Ein wichtiger Teil davon ist auf die kulturellen Unterschiede zwischen den akademischen Disziplinen zurückzuführen. Den disziplinären Differenzen liegen reale kulturelle Unterschiede zugrunde, und diese prägen die Art und Weise, wie Menschen kommunizieren. Solche Unterschiede können ernsthafte (und schwer zu erkennende) Kommunikationsprobleme verursachen. Durch eine sorgfältige Kommunikation, die den kulturellen Differenzen zwischen den Disziplinen Rechnung trägt, können viele praktische Probleme entschärft werden, die für eine wirksame kooperative Forschung von grund-legender Bedeutung sind. Die Bedeutung des Übersetzens in interdisziplinären Forschungsteams wird hervor-gehoben. Die Archäologie kann ihre langsam zunehmenden Erfahrungen mit interkultureller Kommunikation nutzen, um ihre interdisziplinäre Effektivität zu steigern. Um diese Vorteile zu nutzen, ist es wichtig, auf Ausbildung und Beschäftigung von Personen mit einer breiten interdisziplinären Basis zu achten, damit in Teams die wichtige Rolle des Übersetzens ausgefüllt werden kann.

Schlagwörter

Interdisziplinäre Forschung, Kommunikation, Übersetzer*innen

Introduction

In this article I argue that explicit attention to communication patterns can be very beneficial in cooperative research across disciplinary boundaries. In particular, the role of disciplinary translators merits special attention. My argument comes with all the baggage of an author who is a white male archaeologist, trained in humanities departments in western European universities, but with a sciences training from secondary education. In line with the personal inspiration of the content, I have opted not to write this paper solely in traditional authoritative depersonalised language. The argument should stand and be judged on its own merits, not on what is in effect a rhetorical trick.

Due to my background, the focus of this paper is on archaeology. Because of archaeology's "magpie" approach to its object of study, however, combining as many disciplines as it can (cf. Kristiansen 2009; Sinclair 2016), the disciplinary question of how to integrate new approaches within archaeology presents a microcosm of larger interdisciplinary movements within the academy (Wallerstein 2003; Klein 2005). So, while the specifics are concerned with archaeology, the wider implications could benefit interdisciplinary collaboration outside archaeology.

The current special issue is a result of recent developments within archaeology. With the advent of new scientific techniques, old debates have seen a resurgence and older theories have seemingly received a new lease on life. These new strands of research necessitate composite teams made up of specialists from separate and sometimes quite different (sub-)disciplines. Increasingly, interdisciplinarity is also stressed as a requirement for grant success (Ion 2017: 178; Kerr 2020). At the same time, is this a new phenomenon hitting archaeology? As noted, archaeology has always been a magpie. Concerns about communication between different subdisciplines have been voiced throughout archaeology's history (Hawkes 1968; Pluciennik 2011; Sinclair 2016; see also Venclová 2007). In this sense, this recent wave might not be a new buzzword, but something that archaeology has considerable experience with. We can harness this and archaeology's slowly growing experience of intercultural communication (cf. Colley 2002; Levy 2007) to tackle the internal archaeological issue of communication between subdisciplines, but also provide inspiration for interdisciplinarity outside of archaeology (cf. Erickson 2011; Blouet 2019).

What Is Interdisciplinarity?

I do not believe that interdisciplinary knowledge is of an inherently different nature to knowledge gathered within a single discipline. Rather, the human quest for knowledge is a single rope made of different disciplinary strands (cf. Graff 2015: 1–19). In this metaphor, where one discipline ends and another one starts is largely irrelevant, as the strands are twisted in the rope-laying process. Different disciplines have different methods, rationales and truth criteria, certainly, so the metaphor should not be taken too far. I will argue below that there are very real (cultural) differences underlying disciplinary divisions, but the knowledge gained within different disciplines is not of a radically different order, although care should be taken when translating it between disciplinary languages.

Reflection on interdisciplinarity is largely the result of practical difficulties encountered in carrying out interdisciplinary research; questions such as where to report results in a publishing landscape that is organised along disciplinary lines or how to make sure that interdisciplinary research is more than mere juxtaposition of disciplinary results (cf. Birnbaum et al. 2017: 12–13, 23; although see Klein 2005). This does not mean that difficulties encountered are not real, but I contend that these are largely practical, rather than epistemological. Because of this, my focus will be on practical observations and suggestions to guide our thinking about, and improve our execution of, communication in interdisciplinary research. As my focus is on communication, there will not be space to address the political dimensions of interdisciplinarity (cf. Lotrecchiano and Hess 2019), important though they are. Furthermore, because of this comparatively practical focus, I will not delve into the differences between the various ways in which researchers from different disciplines can work together (interdisciplinarity, multidisciplinarity, transdisciplinarity; see Wagner et al. 2011). Here, I will use the term interdisciplinarity to contain all the instances where people from different disciplinary backgrounds cooperate towards a common research goal.

The idea of interdisciplinarity rests on the academic "given" of different disciplines that complement each other. This is not to say that this is the only route through which interdisciplinary collaborations are forged, but if disciplines did not exist, or if they offered nothing to outsiders, there would be no point in calling such research interdisciplinary. This means that questioning interdisciplinarity can proceed in two directions. We can examine the legitimacy of dividing the human quest for knowledge and understanding, or we can probe the complementarity of the resulting disciplines. The latter path only really makes sense if we accept a very reified version of an affirmative answer to the former question. Only if we suppose that the boundaries between disciplines are natural and very rigid, and we assume that anyone's choice to pursue a given discipline is final and absolute, can we even entertain the possibility of suggesting that different disciplines have nothing to offer to each other. Any more nuance to this position forces us to accept that if there are legitimate differences between disciplines, there is at least something that separate disciplines have to offer one another. The question of whether this interest is sufficient to warrant cooperation between disciplines quickly reduces to a practical evaluation of the individual merits of a given research question.

Fundamentally, academic disciplines as we know them today (certainly in the West) exist for practical reasons. The endeavour of human understanding has progressed so far and into such detail that it has become less and less feasible for any individual to keep abreast of all the developments within one's own discipline, let alone those in many others (cf. Collini 1998). The epithet "the last person to know everything" has been awarded to several people in history, but they share at least one very important quality: they are all dead and have been for a long time. It is simply impossible for a finite individual to master more than a few academic specialisms. As the cutting edge of knowledge production is pushed ever outwards, an ever more specialised foundation is needed for those who wish to contribute to the endeavour. To provide and maintain this foundation, the disciplines as we know them formed more or less organically as divisions of the whole. In this practical sense, the current disciplinary divisions are certainly legitimate.

Differences in Disciplinary Culture

In describing the process of separation as "organic" I do not wish to imply that the resulting disciplines are "natural" or that the current divisions are the only possible ones. There are many different ways in which the process of knowledge gathering and creation could have been subdivided. The appeal of interdisciplinary research points to this fact. This is research that apparently does not sit comfortably in the current subdivision. The fact that positions of academic boundaries have arbitrary qualities does not mean, however, that the division is essentially random. Apart from political pressures that steered development during the growth of the university system (Wallerstein 2003), there are broad, real differences underlying "superficial" disciplinary divisions. While these do not determine where dividing lines between disciplines will be situated, they do influence the ultimate disciplinary map by suggesting natural allies or cognate disciplines, which are closer together to each other than to others.

I would argue that these very real differences in the approaches of the various branches of the academy can best be characterised as *cultural* differences. The division between the natural sciences and the humanities is the most obvious and the most debated division. How these two branches differ in object of study, truth criteria, or application of method has been debated since at least the 19th century (Collini 1998; Critchley 2001; Gould 2003) and so need not be covered here. The important differences are often found not so much in easily observable things such as the knowledge of basic principles that C. P. Snow decried in *Two Cultures* (Snow 1959; cf. Collini 1998). Snow's argument was that scientists and those trained in the humanities had too little common ground for meaningful communication. While some of this lack of common knowledge is perhaps true, I do not think that this is ultimately as large an impediment to day-to-day communication as a lack of common phraseology or disciplinary culture. Hans-Georg Gadamer (1990) argues that the characterising difference between the *Naturwissenschaften* and the *Kulturwissenschaften* is the difference between truth and method. The sciences turn to specified replicable methods to guide their search for knowledge, whereas the object of study for the humanities does not conform to the prerequisites of scientific method. Gadamer suggests that the natural sciences and the humanities actually use different types of induction. Natural scientific induction relies on the researcher's own reason, whereas cultural scientific induction is more instinctive, involving a certain tact, memory, and a feeling for when to allow authority to speak (Gadamer 1990: 11). Both sides think in different ways. Gadamer concludes that these are psychological

differences. I would characterise them as cultural differences, because they involve different values (e.g. in the value placed on replicable experimentation) and cultural elements such as language differences (see below). These are important differences, though they should not be overstated as some Kuhnian incommensurability (Kuhn 1962), nor as clear-cut binary divisions as in Snow's *Two Cultures* (Snow 1998 [1963], though compare later editions of the book). Broad cultural differences exist, but their ways are not wholly exclusive, nor do they map neatly onto disciplinary divisions. None of these ways of thinking is more natural, all are cultural, and intercultural communication is possible. As with any cultural group, though, members need to be taught the proper ways to think, behave, and speak.

Disciplinary Cultural Socialisation

In schools and universities, where humans are disciplined into their respective fields, training sows the seeds of these cultural differences. Students need to learn disciplinary vocabulary and jargon and how to use them. New words and meanings are learned in a relatively straightforward manner, but they are used in culturally specific ways. Where vocabulary is exclusive to the discipline, this does not pose a problem beyond the need to learn new terms. Sometimes, though, disciplines use general terms in discipline-specific ways. The meaning of a term may be different from one discipline to another. For example, in the sciences the word "error" has a specific technical meaning, whereas for many archaeologists it means that someone has done something wrong. Unawareness of such differences can lead to mutual non-comprehension. On the Arch-I-Scan project[1], a collaboration between archaeologists and mathematicians, we archaeologists failed to communicate to the mathematicians that when we were talking about "whole" vessels, we meant vessels from which a complete profile could be extracted. The mathematicians, under the (quite reasonable) assumption that "whole" meant undamaged, were not adequately prepared for what they were faced with. Here, the miscommunication was very obvious, but there are many situations in which it will not be so obvious and miscommunications that linger beneath the surface have a much greater potential for misaligning expectations within interdisciplinary collaborations.

Beside differences in vocabulary, there is the potential for speech patterns to be different between disciplines. Arguments are constructed differently because of subtly distinct truth criteria, and I have had the experience that even certain types of humour can be discipline specific. Because such communication patterns are not directly linked to subject matter, it is very easy for practitioners to see them as natural or universal, whereas they are actually discipline specific, leading to greater potential for confusion when interacting with people from outside one's discipline.

Disciplinary socialisation can also result in different ways of thinking and approaching questions. By and large, (natural) science education revolves around finding the correct answer. This is done through applying the right method for the problem at hand and following it through correctly. In fact, evaluation is largely focussed on this application of the correct method, rather than on the answer itself: "Show your way of working!". The correct answer achieved by the wrong method is not seen as a correct answer, since it was acquired by chance.

In the humanities, by contrast, students are taught to give good answers. "Correct" is much more difficult to define in these disciplines, and as such a good answer means a well-argued one that is not blatantly untrue. Here we also see the need to show one's way of working: single-word answers are unlikely to score high marks in humanities exam papers, but the reason for this is slightly different. Humanities teachers are not looking for the correct application of method. They are looking for a demonstration of reasoning and marshalling evidence in support of the thesis or argument. For various reasons, there are certainly incorrect, inadequate, or wrong processes of thought, but not narrowly defined correct ones.

Of course, archaeology is a poor example of this characterisation, since it amalgamates influences from so many different traditions into a single discipline. There are those with degrees in the sciences and in the arts, all equally archaeologists. There is a wide and venerable body of literature on this topic (e.g. Hawkes 1968; Coudart 2006; Criado-Boado 2016). Often, however, collaboration between different branches of archaeology encounters similar

1 https://le.ac.uk/archaeology/research/new-approaches-to-the-material-world/arch-i-scan. Viewed: 18.8.2022.

issues of communication that I will discuss below. So while archaeology cannot be neatly mapped onto the caricature sketched above, I would argue that the latter is still relevant for archaeology when the two broad fields of sciences and humanities interact, either internally in exchanges between different subdisciplines or externally in interdisciplinary cooperation.

The differences in training between the sciences and the humanities can lead to different dispositions to problem solving. I have no evidence beyond the anecdotal to back this up, but it might be that people who have followed a science training are primed to look for a general solution first, because it is in the general that problems should be solved. Starting by working through a concrete problem by hand is in some ways an admission of failure to find an elegant general solution out of which the answer to the concrete problem emerges. By contrast, those disciplined in the humanities see it as unavoidable to first work painstakingly through all the specific sources to describe and understand a specific case and then distil a general answer from that. As a result, they may have fewer objections to starting with legwork.

Similarly, there may be different attitudes to quantification. Those socialised in quantitative disciplines may be more inclined to work with quantitative ball-park figures, homing in on an accurate number through iteration, whereas more qualitatively minded researchers are often very reticent to quantify ideas, because they feel that this suggests spurious accuracy or certitude. For example, date ranges for Gaulish *terra sigillata* are often (though not exclusively) expressed in terms of reigns of Roman emperors rather than as numerical dates (e.g. Webster 1996). When pressed to explicate what such ranges mean, pottery experts I have talked to have often been very resistant to put numbers to their date ranges. Conversely, quantitatively minded researchers may find non-numerical data difficult to integrate into their models (Vander Linden and Saqalli 2019). It can be very tempting to exclude such qualitative data from a formal model, or to accord it less importance in the research, to the detriment of the overall conclusions but also severely hampering cooperation within research teams. Differences in disciplinary culture can have deleterious effects on cooperation when they are explicitly observed (see Grey 2012: 151–153 for the example of friction between linguists and mathematicians at Bletchley Park), but when they pass under the radar, the effects may be much more pernicious. I will argue that explicit attention and sensitivity to disciplinary cultural differences can significantly reduce such risks.

The Necessity of Communication

It is in cooperation that the main added benefit of interdisciplinarity lies. While I will argue below that most problems of interdisciplinarity reduce to problems of communication, the foundation of success is ultimately humans joining hands to solve a problem by working together. This goes further than each person supplying their part. In the most successful collaborations, all participants are willing to go beyond their own boundaries to approach their collaborators as fellow humans. This is because true understanding is found in meaningful conversation, where participants actively try to relate to one another over the subject of the conversation (Gadamer 1990: 183–184). In trying to understand the other, one attempts to see how they got to their point, even trying to strengthen their argument to fully grasp their position. This is not accomplished by relinquishing one's own point of view, losing oneself in the other's position as it were, but rather in endeavouring to reconcile perspectives in a "fusion of horizons" (Gadamer 1990: 297, 305–312). In their chapter in a volume about archaeological computational modelling (an interdisciplinary endeavour *par excellence*), Mehdi Saqalli and colleagues (2019) stress the importance of sacrifice to the success of an interdisciplinary project. When all partners in the collaboration are willing to sacrifice some disciplinary specificity, the resulting model can be better overall. Rather than optimise the process for disciplinary standards, the whole can be more than the sum of its parts. The same applies to non-modelling interdisciplinary collaborations. Often, these do end up as little more than the juxtaposition of disciplinary results, often even published separately, but if all sides are willing to compromise, the whole can transcend this.

The importance of conversation to understanding highlights the crucial role that communication plays in interdisciplinary collaboration (cf. Lotrecchiano and Hess 2019: 183). While it will not solve all issues, communication's importance in the success of interdisciplinarity cannot be overstated. Certainly, this is because of the positive, constructive aspects of communication in bringing humans together in pursuit of a greater good, but also because most, if not all, problems of interdisciplinarity ultimately reduce to a range of problems of communication. Gunther

Tress and colleagues (2006: 467; cf. Spanner 2001) list some of the major barriers to interdisciplinary research:

> "spatial distance separating research teams, additional time needed for integration, difficulties in leadership and personal chemistry, lack of common terminology, different academic traditions, different methodologies, incompatible power hierarchies between disciplines, unsuitable organizational infrastructure and the current merit system. These studies also all mention difficulties in publishing from integrative research projects." (Tress et al. 2006: 467)

All these barriers are variations of communication problems, with the possible exception of organisational structure and the merit system (although the main way in which organisational structure impedes interdisciplinary research is by hampering effective communication). The differences in disciplinary culture described above, both in language and in practical approaches, are only problematic where they lead to misunderstandings or to a lack of communication. We need to be aware of the differences in order to address them, and often they only become apparent if some misunderstanding arose because of them, but the best way of detecting and mitigating them is open (and, ideally, face-to-face) communication.

Of course, in (interdisciplinary) teams differences of disciplinary culture are added to the cultural diversity that exists in the group of people. Academic teams are often comprised of people from different countries, with all the cultural baggage that entails. Add to this that many of these people will be communicating in what is not their first language and the (cultural) Babel that can ensue is obvious. Here, again, the only solution is more (culturally sensitive) communication.

Disciplinary jargon is, of course, another obvious issue of interdisciplinary research. It is also an overtly communication problem. The words we use to express ourselves may not be shared between project partners and need to be explained. The same holds when one partner in the collaboration does not understand the process or results of another partner. This simply reduces to not (yet) having spent enough time explaining it. Of course, not everyone in the collaboration can be an expert in all aspects of the project – that is the whole premise of interdisciplinary research – but it pays to bring people up to speed with at least the basics of the process and reasoning that go into the disciplinary input, even if only to avoid misunderstandings and misrepresentations.

Different expectations are a further problem that is ultimately a communication issue, for example, around funding. While funding is increasingly advertised as prioritising interdisciplinary research, this does not mean that interdisciplinary projects are more successful in securing it (Bromham et al. 2016). Funding may come with requirements with which some members of the research team may be unfamiliar. When we are talking about collaboration between different subdisciplines of archaeology, these problems might not be as pressing (though science-oriented archaeology often gets funded from different sources than humanities-oriented archaeology), but the wider the interdisciplinary scope of a project is, the more likely it is that certain partners in the collaboration are unfamiliar with the expectations of the funding body. Even then, it is a relatively minor issue, which can be easily dealt with, but it is one that flags the importance of communication at every stage of an interdisciplinary project, from the very inception to the final crossing of t's.

This leads to a related, but less easily resolved, problem: that of where to publish the results of interdisciplinary research. Even though interdisciplinary research is being promoted by funding bodies, publication outlets are by and large still organised along disciplinary lines. This means that it can be difficult to judge where results of interdisciplinary collaboration can and should be published (Tress et al. 2006), because it is harder to identify a suitable outlet, or because editors may (be perceived to) feel that it falls outside the scope of their journal. This need not be because of overt territorialism. Within one's discipline, one often has a feeling for which publication outlets are most prestigious. Especially if the earlier exhortation of sacrifice is adhered to, interdisciplinary research can be harder to publish, because concessions may have been made to disciplinary specificity for the common goal. The overall results of the work may be better, but that may not be reflected in the evaluation along disciplinary lines.

Additionally, academic positions are also organised along these same lines and applicants are judged on disciplinary (publication) criteria (cf. Graff 2015: 1–2). At least there is a strong perception that this is the case (see Anderson et al. 2007). Even if in reality other things (also) get taken into account (Nosek et al. 2012: 621–622), the perception of a premium on disciplinary publications can be enough to potentially make interdisciplinary publications less valuable to the careers of members of interdisciplinary teams, since they would not carry the same weight as work published in traditional disciplinary journals. The extent to which advancement in the profession is

tied to high-impact journal publications can also act as a barrier to interdisciplinary collaboration, since this work fits less comfortably in a disciplinary publishing landscape. For the same reason, the establishment of journals dedicated to interdisciplinary work is only going to be a partial solution, since, until these carry the same prestige as discipline-specific ones, it is going to be safer to publish in disciplinary outlets. In a context of precarious contracts, careers, and livelihoods, this can feed a process whereby partners in the collaboration prefer to publish the results of their specific work package separately, hampering interdisciplinary projects' success (cf. Giner-Sorolla 2012 for a similar argument regarding questionable methodological practices). The problem of communicating interdisciplinary results (to disciplinary audiences) can therefore seriously impede interdisciplinary research efforts. Of course, problems of precarity are unlikely to be resolved with solutions directed at the "narrow" issue of interdisciplinary research. Wider, institutional changes are needed, such as widening the publication bottleneck, using broader hiring criteria, and providing more secure (or at least less extremely precarious) employment opportunities in academia. While desirable, such discussions fall outside the scope of this paper.

Communicating Better

So far, I have argued that real cultural differences exist between disciplines and that these get added to the cultural spectrum of bringing together an international group of scholars when working on interdisciplinary projects. I also maintain that most problems of interdisciplinarity ultimately reduce to communications problems. The only solution to communication problems is more (and better) communication (cf. Laneri 2002; Watkins 2006; Harding 2007; Holtorf 2007 for similar approaches to specifically archaeological versions of this problem). The most important practical improvement to interdisciplinary cooperation lies in more and better intercultural communication. Within archaeology there is growing expertise, or at least experience, with intercultural communication (Martindale and Lyons 2014). This has been driven primarily by increasingly sensitive engagement with indigenous groups by archaeologists and the emergence of indigenous archaeology as an explicit mode of practicing archaeology (Ferris 2003; Smith and Wobst 2005a; Zimmerman 2005; Atalay 2006; Watkins 2006; Levy 2007; although see these very same publications, and compare Hamilakis 2016: 679 for how easily and often archaeology still gets this wrong). We should learn from this experience in our approach to interdisciplinary cooperation.

The analogy should not be seen as a perfect mapping of work with descendant communities onto interdisciplinary academic work. Of course, the scale of cultural differences and sensibilities is vastly different. The distress involved (largely borne by indigenous people) in their intercultural interactions with archaeologists is on a completely different scale to the inconvenience in which interdisciplinary miscommunication can result. It can, however, be enlightening to consider a more extreme case so that problems and the relevance of potential solutions are clearer. Since the 1970s archaeologists, most prolifically in North America, started to pay increasing attention to archaeology's relation to indigenous groups (Ferris 2003; Levy 2007). Cultural sensitivities of such groups, and the ways in which archaeological practices offended them, became more apparent to archaeologists. Not all were (or are) wholly sympathetic to indigenous groups' claims to what they consider to be their ancestors, as became clear in debates surrounding NAGPRA legislation (e.g. Meighan 1992). The 2000s saw an increase in attention to archaeological ethics (e.g. Tarlow 2001; 2006), in which the treatment of descendant communities was accorded a prominent position (see the editorial statement of the *Journal of Social Archaeology* 2001; contributions to Smith and Wobst 2005b). This movement fed into, and was driven by, a desire to create archaeological practices that were inclusive of, rather than in opposition to, descendant communities (Lyons and Supernant 2020). By attempting to collaborate to mutual benefit and devising methodologies that actively take cultural differences into account, both academics and indigenous groups can end up better for the process (Kovach 2009).

One of the most important lessons of this more thoughtful engagement with descendant communities was humility (Colwell-Chanthaphonh and Ferguson 2004; Zimmerman 2005; Hoffman 2020). Unsurprisingly, indigenous communities did not appreciate outsiders (descendants of their colonisers) coming to them to tell them what their past was like, contradicting their own narratives of their place in the universe. Being humble, not according yourself more importance than you should (when working with people who know more than you do, your importance should probably be lessened), can go a long way to establishing trust, although the process takes time and effort. Extrapolating to this article's concern for interdisciplinarity, it is worth noting that this central

value of humility resonates with Saqalli and colleagues' (2019) emphasis on self-sacrifice in interdisciplinary cooperation, discussed above.

In exploring how to ethically engage with indigenous and descendant communities, it quickly became apparent that there were culturally different ways of communicating, which were hampering communication (Watkins 2006). Archaeologists (a largely white, middle-class group) often use rather direct, explicit speech patterns, whereas members of culturally different groups are often much more comfortable with less direct, more implicit forms of speaking (cf. Elliott et al. 1999). Written contracts may also trigger very different responses depending on whether or not groups have a history of broken treaties or other reasons to mistrust officialdom (Zimmerman 2005).

Of course, archaeologists were not the only ones, nor even close to the first, to notice the differences in communication styles between minority groups and those of European descent. In wider society, the same issue was identified and acted upon. In America, publications such as the Peace Corps' *Culture Matters* (1997) and the *Toolkit for Cross-Cultural Collaboration* (Elliott et al. 1999) identified intercultural communication as a major area of potential enhancement and suggested ways of improving skills in this direction. Archaeologists wisely looked to this wider expertise to improve their own practice (Watkins 2006; see Atalay 2007 for archaeological applicability of more sensitive ways of working outside the context of working with indigenous groups). As almost all problems of interdisciplinary collaboration reduce to problems of (intercultural) communication, the utility of such tools will be obvious. I will focus on the *Toolkit for Cross-Cultural Collaboration*, as the way the authors phrased their recommendations resonates with my argument in this article, but the message is not unique to this document. Again, the cultural differences underlying interdisciplinary misunderstanding are clearly much smaller than those discussed in the report. As such, the adaptations and accommodations perhaps need not be as fundamental as some of those identified in the toolkit, but using them to shape our ideas can be very beneficial.

In the *Toolkit for Cross-Cultural Collaboration*, the authors identify unawareness of culturally different ways of communicating as one of the biggest barriers to sensitive and successful intercultural collaboration. Such unawareness is understandable in the sense that everybody is enculturated within their own group to be familiar with that group's speech patterns. It is only too easy for these to become so self-evident as to be considered part of human nature. In an American context, Candia Elliott and colleagues note that such latent assumptions can lead to problems where representatives of officialdom (who are statistically more likely to be of European descent) take their own speech patterns to be normal and others' deviations from this norm, rather than realising that theirs is but one ethnic variation in the mix, albeit the dominant one. Members of other minority groups may feel disrespected because they themselves are not familiar with the culturally particular speech pattern and what the underlying intent is.

In our example of interdisciplinary cooperation, it is not automatically the case that there is a normative difference between the various disciplinary cultures, although recognising the distinctions in disciplinary culture will still take effort. We potentially start higher up on Elliott and colleagues' (1999) "stages of intercultural sensitivity", possibly making the necessary adjustment process less complicated. Because our disciplinary cultural differences do not correlate necessarily with a disparity in privilege or power, we have a better starting point.

Elliott and colleagues emphasise that it is not outwardly visible markers of cultural diversity that are the key ones that inhibit collaboration. Rather, it is the underlying goals, values, and communication styles that "cause cultural differences to be misinterpreted as personal violations of trust or respect" (Elliott et al. 1999). It is such more subtle differences that I highlighted earlier as the important disciplinary cultural differences to bear in mind in interdisciplinary cooperation. The *Toolkit for Cross-Cultural Collaboration* further stresses that the cultural competence that forms that basis for truly successful cooperation is not "something we pick up, with time, by working with persons who are different from ourselves" (1999, cf. Lyall et al. 2013: 67 for a similar argument in the context of interdisciplinary collaboration); it requires prolonged, conscious effort. Just being exposed to difference does not automatically lead to better or more culturally sensitive communication. It is possible that such exposure can lead to accommodation, finding a modus vivendi, but this is not the same as understanding. Understanding forges deeper relations which enable more than simple coexistence. Such understanding is important in the building of trust, which is an invaluable component in the process by which an interdisciplinary project can achieve a whole that is greater than the sum of its parts.

Translators

In light of this required effort, it can be useful to select liaisons, not to offload responsibility onto single individuals or to have them act as representatives to speak for a group, but to facilitate smooth communication. In the context in which it was written, the toolkit suggests that liaisons can play an important role as go-betweens between officials (or the system) and minority groups. Liaisons should not necessarily act as representatives to speak for the group but act as go-betweens to facilitate communications between groups of people (Elliott et al. 1999). Of course, they need to be sufficiently versed in both cultures to successfully fulfil this role (cf. Allen and Phillips 2010: 18–19 for similar remarks regarding mutual understanding between archaeologists and indigenous communities). In a sense, they need to be cultural translators. Even though the original context is rather different than the academic context under discussion, I think this concept of the cultural translator is a good model for improving interdisciplinary communication and cooperation. Interdisciplinary research teams are not often so large as to require representatives to speak for subgroups. In this sense, appointing a separate individual to fulfil this role will not be necessary. This does not mean, however, that the idea is not useful for smaller teams. Employing someone who is versed in different disciplinary cultures (ideally, of course, those represented in the project) and who can translate between them can significantly benefit an interdisciplinary project. As a central figure who intensively communicates with the different subgroups while keeping an eye out for potential misunderstandings, they are better positioned to spot where one party interprets something differently to how another intended it, catching miscommunication early. Furthermore, because of a translator's familiarity with disciplinary cultural backgrounds present in the team and (ideally) the idiosyncrasies of different subgroups, they are also in a position to rephrase communication so as to have a better chance of being understood in the intended way.

This translating need not be someone's only task within a project team. For this reason, there is merit in considering translators in an early stage in a project (cf. Lyall et al. 2013). When putting a team together, it might be a good idea to discuss who will play the role of translator (see Gibson et al. 2019 for wider communications and career concerns in interdisciplinary project design). If new people need to be hired, it is worth contemplating having representatives of all disciplinary subgroups on the committee and paying explicit attention to this translator role in the hiring process. Of course, the translator needs to possess certain qualities, such as affinity and experience with a range of the disciplinary backgrounds in the team. Ideally, this affinity would date back to their education, as it is in this stage that disciplinary cultural attitudes are inculcated and such things may be more difficult to pick up through simple exposure (see above). We might use this point to argue for a broad educational basis for students, where they experience a broader range of disciplines than is common in western European universities. At least candidates who have received an education in more than one discipline have a leg up when it comes to being interdisciplinary translators.

Since I have argued that most, if not all, problems of interdisciplinarity reduce to communications problems and that the only solution to problems of communication is more communication, the potential role for translators is obvious (see Ng and Litzenberg 2019 for an argument for an analogous role in integrating interdisciplinary research in departments). This role is not one of a scapegoat onto which the communications problems can be offloaded, but a guiding one: helping project members engage in open, sensitive communication. This is especially so since more communication is the *sine qua non* of solving problems of interdisciplinary communication, but it is not a case that more of the same is a sufficient condition for solving communications problems. It is the better, more streamlined, (disciplinary) culturally sensitive communication that translators offer that, in my opinion, hold most promise for practical improvements in interdisciplinary collaboration.

Conclusions

In this article I have argued that most problems of interdisciplinarity reduce to communication problems. While some of these problems are systemic and, to a degree, built into the framework of academia, many of them are quite practical in nature and can be addressed or at least mitigated with sensitive attention to underlying disciplinary cultural differences. Especially the role of translators of interdisciplinary culture is very promising in addressing the practical communications difficulties that interdisciplinary teams are likely to encounter. Though technically not an act of interdisciplinary research in itself, such translation has the potential to contribute

significantly to the success of interdisciplinary research efforts. Throughout this article, I have abstracted from archaeology to academia more generally, as the points are more easily illustrated using more general examples. Archaeology, however, can be seen as a microcosm of the wider interdisciplinary landscape. Therefore, the problems and solutions in general are also present and applicable in archaeology. In intercultural communication, archaeology has considerable experience, and this experience puts us in a good place to treat disciplinary cultural differences sensitively and appoint successful translators. As a discipline, archaeology might be uniquely well placed to successfully negotiate the difficulties that come with interdisciplinary cooperation.

In the end, of course, I do not offer a silver bullet. Simply having translators is not going to solve all problems, or even all the ones that I have identified above. Interdisciplinary collaboration will still require hard labour from all parties, including the translators, although the latter's presence has the potential to smoothen the process. Furthermore, the problem of publishing the results of interdisciplinary research will not be remedied by the mere presence of translators. I am convinced, however, that a broader (inter)disciplinary mindset is advantageous to most research teams as well as outside academia. Our times call for more sensitive attention to cultural differences whatever their source, and paying explicit attention to such differences in the training of students will help the human pursuit of knowledge, whether or not these students end up in academia.

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Methodological Anarchism Against Interdisciplinary Archaeology

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Abstract

While interdisciplinarity has definitely enriched archaeological research, especially in light of what has been called the "Third Science Revolution," little has changed in terms of epistemology and methodology in archaeology. In fact, what counts as interdisciplinary research in archaeology nowadays is usually the application of natural science techniques to data that have been recovered archaeologically. Nevertheless, this form of archaeological research has become the gold standard, monopolising funding at various scales.

Interdisciplinarity at its most basic simply means the collaboration between different disciplines. If this is true, one should ask why the term "interdisciplinary" is usually reserved for the combination of archaeology and the natural sciences, rather than the vast panoply of collaborative efforts in archaeology, such as those between art and archaeology or philosophy and archaeology? The aim of this paper is to argue that current interdisciplinary research is theoretically impoverished and non-transgressive. In fact, current interdisciplinary research relies on very basic methods and premises, oftentimes relying only on C14 dates or bone material recovered by standard archaeological methods.

Rather than interdisciplinary research, it might make sense to think in terms of methodological anarchism. As the name indicates, methodological anarchism focuses more on methodologies than disciplines, giving priority to the different ways that the archaeological past can be explained. Rather than following strict formulas, as some interdisciplinary research tends to do, methodological anarchism advocates flexibility and choice of the methods that provide multi-faceted understandings of past reality.

Keywords

Interdisciplinarity, methodology, pluralism, flexibility, anarchism

Zusammenfassung

Während Interdisziplinarität die archäologische Forschung zweifellos bereichert hat, insbesondere im Lichte dessen, was als ‚*Third Science Revolution*' bezeichnet wird, hat sich in Bezug auf die Erkenntnistheorie und Methodologie in der Archäologie wenig geändert. In der Tat reduziert sich das, was heute als interdisziplinäre Forschung in der Archäologie gilt, in der Regel auf die Anwendung naturwissenschaftlicher Techniken bei der Analyse archäologisch gewonnene Daten. Diese Form der archäologischen Forschung ist zum Goldstandard geworden und monopolisiert die Finanzierung archäologischer Forschungsprojekte auf verschiedenen Ebenen.

Interdisziplinarität bedeutet im Grunde genommen nichts anderes als die Zusammenarbeit zwischen verschiedenen Disziplinen. Wenn dies zutrifft, stellt sich die Frage, warum der Begriff ‚interdisziplinär' in der Regel für die Kombination von Archäologie und Naturwissenschaften reserviert ist und nicht für die breite Palette von Kooperationen von Archäologie und zum Beispiel der Kunst oder der Philosophie? Die derzeitige interdisziplinäre Forschung ist theoretisch verarmt und überschreitet keine Grenzen. Tatsächlich beruht die derzeitige interdisziplinäre Forschung auf sehr einfachen Methoden und Prämissen und stützt sich oft nur auf die Analyse von C14-Daten oder Knochenmaterial, das mit archäologischen Standardmethoden geborgen wurde.

Anstelle von interdisziplinärer Forschung könnte es sinnvoll sein, in Begriffen des methodologischen Anarchismus zu denken. Wie der Name schon sagt, konzentriert sich der methodologische Anarchismus mehr auf die Methoden als auf die Disziplinen und räumt den verschiedenen Möglichkeiten, die archäologische Vergangenheit zu erklären, Priorität ein. Anstatt strengen Formeln zu folgen, wie es manche interdisziplinäre Forschung zu tun pflegt, befürwortet der methodologische Anarchismus Flexibilität und die Wahl von Methoden, die ein facettenreiches Verständnis der vergangenen Realität ermöglichen.

Schlagwörter

Interdisziplinarität, Methodologie, Pluralismus, Flexibilität, Anarchismus

Is Archaeology Truly Interdisciplinary, or Has It Never Been?

During the 2020 European Association of Archaeologists annual meeting, there were around 160 sessions, and of these, around 30 referred to advances in "interdisciplinary," "cross-disciplinary," "transdisciplinary," or "multi-disciplinary" research. Going through the list of sessions, one cannot but celebrate how far archaeology has come when it comes to interdisciplinary research. However, not much is clear when it comes to what interdisciplinary research actually entails. In a colloquial sense, interdisciplinarity (and its variants) simply means collaboration between disciplines (Jacobs and Frickel 2009), but how and in what ways does this operate in archaeology?

Interdisciplinarity and its variants have been recently discussed in archaeology (Ion 2017; Nilsson Stutz 2018; Díaz-Andreu and Coltofean-Arizancu 2021), and some brief definitions can be put forward. Subscribing to Julie Klein's definitions (2017), Margarita Díaz-Andreu and Laura Coltofean-Arizancu (2021) state that interdisciplinarity at its most basic means the interaction between two or more disciplines. However, a closer look reveals different types of interdisciplinarity. For instance, there can be shared interdisciplinarity, where a complex problem is tackled by different disciplines, although this does not necessarily entail collaboration; in cooperative interdisciplinarity, problems are tackled together by different disciplines; in methodological interdisciplinarity, the methods and theories of different disciplines are shared to improve quality of results; whereas in theoretical interdisciplinarity, the conceptual models and epistemologies of different disciplines are expanded in order to create a more seamless form of collaboration across different disciplines (Díaz-Andreu and Coltofean-Arizancu 2021: 3). In addition, one can also differentiate multidisciplinary research, which involves the stacking of disciplines, although these disciplines retain their identity, since their knowledge is consulted but not necessarily integrated. As to pluridisciplinarity, which is quite similar to multidisciplinarity, the disciplines involved tend to have some degree of connection, such as chemistry and physics, thus forming their own knowledge subsystem. Finally, transdisciplinarity, as the name indicates, transgresses the very notion of discipline, and usually engages in ideas that transcend disciplines, such as Marxist theory or feminist theory, allowing it to address issues that go considerably beyond the boundaries set by disciplines (Díaz-Andreu and Coltofean-Arizancu 2021: 4).

Based on these definitions, it seems safe to say that most archaeology practised today is either inter-, multi-, pluri-, or transdisciplinary. In fact, Díaz-Andreu and Coltofean-Arizancu explain, histories of archaeology tend to treat the discipline in isolation, as if it has not been influenced by many others (2021: 2). If anything, an argument can be made that archaeology is the ultimate interdisciplinary project, since it is historically built up from a diversity of fields, such as ancient history, geology, and anthropology.

But when interdisciplinarity is addressed, sitting through the countless sessions on inter-, multi-, pluri-, and transdisciplinarity in archaeological conferences reveals that in archaeology interdisciplinarity and its variants denotes a very simple and theoretically bare form of practicing archaeology. I want to start this paper precisely on this note and expose the theoretical poverty of the concept of interdisciplinarity and its variants. As Alexandra Ion contends, archaeology is still far from being a *truly* interdisciplinary science (2017: 193), since it relies on a rather restricted set of methods, even though those methods do originate from different disciplines. Furthermore, at an epistemological level, much of the interdisciplinarity in archaeology is formulaic (Nilsson Stutz 2018: 51), favouring very standardised methods, primarily those used in archaeological science. This leads to a very distorted form of interdisciplinarity (Sørensen 2017), one that heavily favours the natural sciences. Of even more concern is the

fact that this type of research has become the gold standard of transgressive and innovative research, the staple of what Kristian Kristiansen (2014) has called the "Third Science Revolution" in archaeology.

The aim of this paper is to challenge the new interdisciplinary status quo. At face value, the interdisciplinary attitude in archaeology today might appear to be open and inclusive to new ideas, but that is not always true; interdisciplinarity in current archaeology tends to be very narrow and oversimplified – it is like having a very large buffet at your disposal yet only choosing the same two dishes all the time, while ignoring every other dish available. In short, it seems that the interdisciplinary status quo in archaeology is reliant on a very basic standard – interdisciplinarity must involve the recovery or processing of data through some scientific means. This is what interdisciplinarity in archaeology seems to boil down to. Bear in mind that this paper does not suggest that one should abandon this type of research; what this paper aims toward is demonstrating that archaeological research can in fact be much more diverse, inclusive, and distinctive. But for us to recognize this, it is necessary to embrace some form of methodological anarchy.

The Theoretical Poverty of Interdisciplinarity in Archaeology

The different forms of interdisciplinarity and its variants discussed by Díaz-Andreu and Coltofean-Arizancu do describe most types of archaeological research with some fidelity, but they also leave some information out. In archaeology, the term interdisciplinarity and its variants express more than just different types of research; they denote a dissociation from previous, perhaps more "conventional" but outdated types of research, such as the simple collection and sampling of archaeological data, which is often described as culture-historical or antiquarian. I use the expression culture history here not in the cultural normative sense that Binford attributes to it (Binford 1965; Lyman and O'Brien 2004), but as the process of recovering data and building formal databases that describe the general patterns of regularities across a period and region (Clarke 1968: 20–23). In the same way, I also use antiquarianism to describe the process of cataloguing and publishing of data.

Systematic surveys, excavation, creation of typologies, and cataloguing are just some of the most basic forms of doing archaeology, and even though many of these practices now engage with advanced technologies and methods (e.g., geomagnetic prospection, GIS), they are not commonly conceived as interdisciplinary research. Oftentimes, the practice of simply recovering, cataloguing, and publishing of this data is derogatorily defined as outdated (Hofmann and Stockhammer 2017). But there is nothing inherently wrong with culture-historical and/or antiquarian research; these remain important practices in archaeology around the world today (Veit 2017). In contrast, a paradigmatic example of multidisciplinary research is ancient population genomic studies (e.g., Haak et al. 2015; Olalde et al. 2018; Olalde et al. 2019); these studies fit the description of multidisciplinary research perfectly, since they combine two distinct disciplines, archaeology and genetics, which rely on vastly different methods. However, a closer look demonstrates that the process of cooperation between these disciplines is remarkably simple: archaeology recovers material, which is then analysed through genetic methods. Bear in mind that from the perspective of each discipline, the work conducted is quite complex: archaeological excavation is not simply digging holes looking for bones, nor is genetics just the simple process of putting bones in a machine and pressing some buttons. It is *the cooperation between the disciplines that is simple*, not the actual work itself. Furthermore, the bones that serve as the basis for genomic studies, were recovered through standard culture-historical/catalogue type of research. In this example, archaeology just does what it has always done, which is recovering data through excavation techniques, with geneticists analysing the data to map a genomic history. While some criticism can be leveled at this type of research (Furholt 2017; Frieman and Hofmann 2019; Hakenbeck 2019), the results are nevertheless spectacular. Genomic data was something that was virtually absent in archaeology until the last decades, and this new information has proven itself valuable to our understanding of the past.

Following a similar path, cumulative probability distributions of calibrated radiocarbon dates have become one of the prime methods for understanding past demography in recent years (Riede 2009; Collard et al. 2010; Williams 2012), as an example of what Kristiansen (2014) has called "Big Data" research and the intersection of scientific approaches and archaeology. In general, the idea behind this method is that the summation of calibrated radiocarbon dates can serve as a proxy for past population dynamics. At face-value, this method is sound and has contributed crucial information to our understanding of population growth and decline, despite some reservations as to its efficacy (Contreras and Meadows 2014). But just like genomic studies, archaeology plays a rather mute role, in that all this method is doing is collating and modelling radiocarbon dates obtained from conventional

archaeological research. Just like genomic studies, there is nothing inherently wrong with this type of study, but it does show a rather simple and formulaic form of multidisciplinary research.

The problems of relying too heavily on this type of interdisciplinary research have been highlighted multiple times (Cunningham and MacEachern 2016; Sørensen 2017; Nilsson Stutz 2018; Ribeiro 2019, 2021a), and we must be careful with the political and economic impact that this research can have when it comes to access to funding (González-Ruibal 2014; Díaz-Andreu and Coltofean-Arizancu 2021: 15; Ribeiro 2021a), but to reiterate, there is nothing inherently wrong with this type of research.

But nevertheless, one should ask why this type of research is considered the standard of interdisciplinarity in archaeology. For example, Doug Bailey's work involving art and archaeology (2017, 2020) or my own work involving archaeology and philosophy (2021b) are not usually considered interdisciplinary, nor do they really fit the epistemological moulds defined by archaeological practices. Despite critique of scientific modes of explanation (Kelley and Hanen 1988; Wylie 1989), archaeology still operates largely through a scientific mentality (Vanpool and Vanpool 1999). The act of adding scientific methods to archaeology, while enriching it, also naturalizes the arbitrariness of this practice, creating a doxic system that is difficult to overcome (Bourdieu 1977: 164). It is not that art or philosophy cannot be added to archaeology, it is more that doing this falls short in terms of the doxic rules concerning what counts as interdisciplinary science.

Ironically, interdisciplinarity is making archaeology less interdisciplinary. Since the 1990s, the field has fragmented into a plurality of mutually exclusive discourses (Kristiansen 2004; Gardner and Cochrane 2011). While it might denote diversity of discourses, this fragmentation is also a reflection of different cliques insulating themselves in their own ivory towers. The biggest of these towers is the one that accommodates archaeological science. This is the paradox of interdisciplinarity; the use of this term allows archaeology to demonstrate that it is going beyond its own boundaries, but at the same time, interdisciplinarity streamlines archaeology into a set of stock methods, such as those involving genetic, isotopic, or dating material (Ion 2017: 193). With advances in technology and science, archaeology can add more methods in the future, but nothing is stopping "interdisciplinarity" from streamlining these methods ever further.

Klein's (2017) definitions of inter-, multi-, pluri-, and transdisciplinary are useful for thinking of research in terms of single tasks, problems, objectives that require more than one discipline, or require transcending the very concept of discipline, problems, and tasks, such as dealing with climate change or global inequality. Underlining this type of thinking is the idea of a single coherent discourse concerning a problem or a certain phenomenon. In archaeology, understanding past dietary strategies, population dynamics, or migratory behaviour are objectives that benefit from the help of natural scientific methods; however, these methods help produce a singular discourse about them.

But what if the aim is not to produce a singular coherent discourse? For example, in the study of migratory behaviour, one could use the data generated by genomic studies in order to gain a general idea of migrations during prehistoric periods in Europe (e.g., Haak et al. 2015; Olalde et al. 2018; Olalde et al. 2019). They present a rather rough picture of migratory patterns, but these can be improved through the development of more advanced migratory models, designed with prehistoric groups in mind (Cameron 2013). The problem is that none of these methods can answer *what migration truly is and what it represented in the past*. What do I mean by this? If a German citizen living in Kiel decides to move 900 km south, they would find themselves somewhere close to Munich. 900 km is a long distance, but nevertheless, the German citizen would not be considered a migrant. If a Portuguese person living in the Algarve, on the other hand, were to move 900 km south, they would find themselves somewhere in Morocco. Both cases are acts of migration, but the qualitative understanding of the migratory act changes depending on what type of boundary one crosses (Van Gennep 1960), which, in our modern day and age, is the national border. Our understanding of migration is shaped by the invention of modern institutions such as the nation state, among many others. Furthermore, modern borders are more than just the lines we see on the map: they also exist, in a way, at airports and embassies. This has an effect on how we conceive political space (Lefebvre 1991: 8) and how these affect identity. When discussing migration, new ecosystems and areas of contact between different communities could have generated new forms of negotiating identity, and if communities merged, this would have required negotiating territory and exogamy rules. At face value, given the lack of state borders in the past, migration should have been institutionally easier, but upon some reflection, the opposite is probably true. While the modern institution of the state creates artificial borders, there is nevertheless a unified understanding of how

borders work and what is necessary to cross them (e.g., visa, passport). Thus, a complicated question arises for prehistorians: how did people in the past define "their own" and "other" territory? This might seem a rather innocuous question, but our whole perspective on migration is dependent on being able to answer it. The lack of an anthropological understanding of migration has led geneticists to use the term "migration" to denote simply population movement rather than an actual cultural phenomenon of passage (Skoglund and Mathieson 2018: 388). I understand the reluctance of geneticists to deal with migration from a cultural standpoint, but if part of their work requires archaeologists, anthropologists, and historians to cede to them material for analysis anyway, why not engage with archaeologists, anthropologists, and historians in order to understand migration in a more nuanced manner?

The discourse generated by a cultural take on migration will, of course, be of a very different sort, and the methods of analysis in order to gain this perspective will require a different scientific perspective. To quote Tim Flohr Sørensen, "[a]rchaeology may have a particular need for admitting to and owning up to its inevitably uncertain epistemology" (2019: 104). While the archaeological sciences do produce what might seem a more established, objective, and authoritative form of discourse, a conjectural discourse (Ginzburg 2012) could also enrich our understanding of the past. But in order to do this, we must go beyond the way interdisciplinary research is commonly practiced in archaeology.

From Methodological Pluralism to Methodological Anarchism

Immanuel Wallerstein defines disciplines as social constructs whose origins can be found in the historical systems in which they were conceived; additionally, disciplines are institutions with complex material forms, such as university buildings and titles of journals (Wallerstein 2003: 453). Ultimately, while there are crucial differences between disciplines, these differences are also somewhat arbitrary. Following Pierre Bourdieu (1977), it can be said that the boundaries of disciplines create subconscious dispositions, generating behaviours that only exist because the boundaries create them. The archaeologist who wishes to engage in art or philosophy stumbles upon difficulties, not because it is impossible for an archaeologist to be an artist or a philosopher, but because disciplines have established domain-specific areas in which a scholar is expected to become specialised. But not too long ago, it was common to find thinkers transgressing disciplinary boundaries and excelling in multiple areas: Cornelius Castoriadis was a Greek-French scholar born in 1922, who was a very influential voice in philosophy, psychoanalysis, and economics; similarly, Kojin Karatani, has excelled in economics, literary criticism, and philosophy. Karatani in particular engages with all three disciplines at the same time. His book *History and Repetition* (2012) is an engagement with Marx's idea that history repeats itself, in a period when the world had reached the controversially proclaimed "end of history" (Fukuyama 1992). Rather than the end, Karatani argues that history undergoes a process of repetition, which he recognized in Japan's economic and political history and which he analysed through Japanese literature, such as the work of Kenzaburo Oe and Haruki Murakami. What Karatani performs is not interdisciplinary research; it is research that is methodologically fluid and flexible. It is difficult to tell, based on his writings, whether he is intentionally aware that he is transgressing disciplines at all, but either way, his work generates a discourse that is unique. In the process, Karatani opens up new ways of looking at the world that has been popularised in a wide array of fields, most of which he never specialised in, such as geography, architecture, and politics.

While Karatani has had a fascinating and successful career, at no point am I suggesting that archaeologists should mimic his scholarship; his work is of a more reflective nature and his methods and ideas would not translate well into archaeology.[1] What we can and should mimic in archaeology is the spirit that guided his career. Unlike Karatani's discourse, which is primarily conceptual, archaeological discourse aims to answer questions about past (and to an extent, present) societies. With this in mind, we must think of the various discourses that fulfil this need. For the sake of discussion, we can think of multiple discourses in different ways, and here we can start from the more moderate methodological pluralism of Georg von Wright (1971), moving on to the work of Michael

1 However, Karatani's critical reading of Marx through Kant and vice versa in *Transcritique* (2003) and his discussion of Marx's modes of production in terms of exchange in *The Structure of World History* (2014) have crucial repercussions on our understanding of exchange in anarchist economies.

Oakeshott (2015 [1933]), and from there to the more radical methodological anarchism of Paul Feyerabend (2015 [1975]).

Picking up the distinction between explanation (*Erklärung*) and understanding (*Verstehen*), von Wright argues that the disciplines that provide these two types of scientific discourse cannot be collapsed into one another. As he states, the sciences dedicated to explanations, most notably the natural sciences, operate according to a causal logic, and in spite of the variety of how causal explanations are expressed in the sciences, von Wright demonstrates that the teleological form of explanation, that is to say, an explanation based on the *purpose of behaviours*, is not reducible to causes. This was also mentioned by Charles Taylor, when he pointed out that causal explanations of behaviour were very limited, as none of them could provide an understanding as to why humans and animals behave in certain ways (1964). Unlike causal forms of explanation, which tend to be primarily reductionist (Rosenberg 2001), teleological explanations rely on understanding the context of intentional action. That is why disciplines such as history and anthropology often employ teleological explanations, since these disciplines aim to uncover the context in which the behaviour of past humans occurs (Ribeiro 2018, 2019). Alva Noë provides a great example: you cannot understand money or dancing by putting banknotes under a microscope or observing the muscles of dancers (Noë 2009).

In archaeology, the streamlined interdisciplinary approaches tend to operate exclusively with causal explanation, making them extremely limited in understanding topics such as past value systems or ritual behaviours. These two topics are still best understood via approaches such as Marxist theory (e.g., Karatani 2014), theories of value (Graeber 2001), and anthropology of ritual (Bell 1992, 1997), to name just a few. Once again, engaging with these theories in archaeology is not usually considered interdisciplinary research.

Much like Droysen, Dilthey, and Weber, the arguments by von Wright are a renunciation of positivism and neopositivism and the idea that science could be reduced to a single methodology, and it is with this spirit that von Wright argued for the distinction between explanation and understanding. But at a different level, it could be suggested that knowledge, both lay and scientific, can go beyond the methodologies of explanation and understanding. Michael Oakeshott, for instance, suggests that our experience of the world can be recognized as three distinct modes (2015 [1933]). While similar to von Wright's differentiation of scientific explanation and understanding, Oakeshott goes beyond it by differentiating a scientific, a practical, and a historical mode. The scientific mode of experience requires abandoning the world of perception and presupposing the existence of an external and objective world (2015: 131–132). By resorting to the legacy of Descartes, Oakeshott states that central to science is the universality of the scientific method, which is what allows for a communicable form of experience (2015: 135). Oakeshott also highlights that a large part of the communicable experience involved in science is of a quantitative type (2015: 135–136). This is also an argument made by Quentin Meillassoux, noting that the quantitative properties of reality are the only ones that exist outside human perception (i.e., non-correlated to human thought) and, by extension, can be considered scientifically valid (Meillassoux 2008). In archaeology, many of the interdisciplinary approaches mentioned above follow exactly this presupposition (Ribeiro 2019, 2021b). But Oakeshott also describes a practical mode of experiencing reality, and this mode has some overlap with the discussion on teleology (i.e., purpose) described by von Wright. As Oakeshott states, practice is about volition, intuition, feelings, and opinions (2015: 197), which ultimately guide the action of people. Practices are learned and accumulate as the life experience of people. One could also argue that to an extent practices are ultimately ethical in character (Ribeiro 2022). Many of the ideas about practical experience in Oakeshott have been discussed in archaeology through agency and practice theory (Bourdieu 1977; Giddens 1984; Lave and Wenger 1991; Schatzki 1996; Wenger 1998), which has formed a set of discourses that are less easily accommodated by the more scientific one of archaeological science (see Kristiansen 2004; Stanton 2004; Arkush 2011; Moro Abadía 2017). Finally, Oakeshott also describes a historical mode that deals with the course of successive events. Now, successive events are not merely the temporal accumulation of causes and effects, nor is history the pure description of accidental happenings in chronological order; historical discourse is above all its own form of explanation, but one that requires no external cause (Oakeshott 2015: 102, 108). What does he mean by this? Unlike scientific explanations and theories (such as Marxist theory or the theory of structuration), history does not rely on general causes in order to explain; rather, history provides descriptions of action that are so detailed and coherent that additional explanation becomes unnecessary (Oakeshott 2015: 109). Vincent Descombes (2001), also writing on this topic, has described a similar idea, stating that there is an intelligibility to historical composition. For every comprehensible episode in a historical description, one must assume certain events to have happened that led to the episode.

For instance, if a person remembers going for a swim, it must be assumed that the person did in fact go for a swim in the past (Descombes 2001: 182–183).

Oakeshott's tripartite system of modes of experience was published almost one hundred years ago and many of his ideas, while sensible at the time, have been expanded and some even superseded. The idea, of course, is not to accept the three modes of experience as law, but rather to view these modes in light of our current discussion. In archaeology, the different discourses can be elegantly adapted to how archaeology operates, as a discipline that addresses the past through scientific methods, through the study of past practices, and through a historical perspective. At this point, we can debate whether this is not just inter-, multi-, pluri-, and transdisciplinarity in disguise. Not necessarily; while interdisciplinarity and its variants are discipline-focused, Oakeshott's modes of experience are about different types of knowledge regardless of the disciplines that produce them. Archaeology could, for instance, address a topic such as migration according to the three modes without necessarily relying on different disciplines, although the knowledge produced by different disciplines would nevertheless be helpful. Similarly, in certain types of research you can have de facto interdisciplinarity while relying on a single mode. For example, socio-environmental studies of past societies often rely on historical documentation, but this documentation is only useful when reduced to proxies that can be compared to environmental data (e.g., Kaniewski et al. 2012). In cases such as these, the aim is *consilience*, that is to say, different disciplines providing independent lines of evidence in support of or against a single hypothesis. While this is de facto interdisciplinary research, the mode of experience is exclusively of a scientific kind.

Finally, of crucial importance to our discussion is Paul Feyerabend's *Against Method* (2010 [1975]). At its most extreme, *Against Method* is considered a direct critique of the idea that there is such a thing as a scientific method, but the arguments contained within the book are considerably more moderate than one would expect. Feyerabend produces two arguments of interest to us: the first one serves as the main case-study of the book, which focuses on Galileo's heliocentric model. According to Feyerabend, most of the methodological standards of what qualifies as accurate and objective science were not followed by Galileo when he conceived the heliocentric cosmology. In fact, had he followed what in the twentieth century is considered correct methodological standards of science, Galileo would have never been able to conceive the heliocentric model. As Feyerabend notes, this model depended on several ad hoc connections and observations that have no scientific validity but that were very helpful to Galileo at the time (Feyerabend 2010: 116). If anything, the genius of Galileo resides not in the fact that he followed strict scientific procedures, but on the contrary, it was precisely by recognizing the limits of science and having a humorous, elegant, and flexible attitude to science that allowed Galileo to be successful (Feyerabend 2010: 121).

The second argument that is of interest to us is that science is at its best when it is anarchic, or to use the expression by Feyerabend, "anything goes" (2010: 12). In a similar vein to von Wright, this is an argument against the monistic view of science that was popularised by neopositivism during the first half of the twentieth century. But there is an important aspect about Feyerabend's critique of positivism, namely the circular reasoning involved in how scientific procedures are justified. As Feyerabend explains, to state that a method or procedure can be dismissed because it is non-scientific involves a dogma, since it is scientists themselves who decide what counts as scientific or non-scientific (2010: xx). Following the same reasoning, archaeologists could argue that Bailey's (2017, 2020) work with art and archaeology is neither interdisciplinary nor is it archaeological at all and dismiss it as some sort of pseudo-science or pseudo-archaeology. The moral lesson from *Against Method* is that conducting science in a prescribed manner and producing successful results cannot be a justification of why we should continue to follow the same standards and procedures. What might work in one scenario might not work in another. Furthermore, completely contrasting methodologies can produce wildly different discourses yet still be considered successful; ultimately, there is no way to gauge which "success" is better.

Now, the three thinkers discussed above, George von Wright, Michael Oakeshott, and Paul Feyerabend were neither archaeologists nor were they writing in the twenty-first century, so their work must be viewed according to our times and contexts. To an extent, all three thinkers are against the idea of a monistic science or way of obtaining knowledge in general, and interdisciplinarity in archaeology is to a large extent still primarily an epistemologically monistic enterprise.

Of the three thinkers, Feyerabend's methodological anarchism is particularly interesting to our discussion on

interdisciplinarity, but some caveats must be outlined, namely concerning the relation between Feyerabend and anarchism. The first edition of *Against Method*, published in 1975, was subtitled *Outlines of an Anarchistic* Theory of Knowledge*. Yes, the subtitle had a footnote that explained Feyerabend's conception of anarchism, which was removed from the 1988 and following editions (Hacking 2010: xiii). The reason why this subtitle and footnote existed was because the book was dedicated to Imre Lakatos, who was good friends with Feyerabend, and who had motivated him to write the book. Unfortunately, Lakatos died in 1974, the year before *Against Method* was published. Politically, Lakatos believed that Feyerabend was an anarchist. There is some truth to this, since Feyerabend did sympathise with anarchism. However, as Feyerabend explained in a letter to Lakatos in 1972, he uses the term anarchism in its more general rather than in a political sense; as a political movement, anarchism followed precepts that he was not really ready to accept (Hacking 2010: xiv). Feyerabend believed that a much better term to describe both his intellectual and political stance is Dadaism. As an art movement of the early twentieth century, the idea of Dadaism is that anything could be art, as long as the artist expresses it as such; what was important to Feyerabend was not convention but the opposite: taking convention considerably less seriously.

Anarchist Epistemology

Feyerabend's dialogue with Lakatos shows serious concerns about the student revolt of 1968, namely the violence it involved (Motterlini 1999), so his disavowal of anarchism is not necessarily surprising. Nonetheless, his ideas are somewhat reflected by a new set of notions that have become popular in archaeology: anarchist theory. In general terms, anarchist theory has been applied to the interpretation of social structures of past and present societies (Angelbeck and Grier 2012; Angelbeck 2016; Sanger 2017), in that it recognizes that many societies followed more collaborative and non-authoritarian forms of governing than those that fill standard narratives of world history. This started with pioneering work based on the idea of heterarchy (Crumley 1995; DeMarrais 2013), which similarly recognized more flexible forms of power distribution. Additionally, some literature on anarchist theory in archaeology has also recognized the importance of anarchism from a methodological standpoint (Morgan 2015; Henry et al. 2017; Angelbeck et al. 2018; Flexner and Gonzalez-Tennant 2018). From this standpoint, anarchist theory advocates the subversion of conventional centres of power and authoritarianism in archaeology, which would affect how archaeologists behave in excavation teams and how archaeology integrates descendent communities in our research (Angelbeck et al. 2018: 1). Traditionally, anarchism is thought of in terms of chaos, but this is not exactly what anarchists in archaeology promote; the underlying idea in anarchist theory is that centralized authority is not necessarily a good position to adopt, especially for professions such as archaeology. Anarchist theory also argues against unnecessary bureaucracy and rules; as David Graeber has argued, liberalism has created a paradox, in that the more you try to fight government interference in social life, the more red tape and interference is generated (2015: 9). Anarchist theory also recommends moving beyond mainstream forms of archaeological education and publication, by embracing ideas from the punk movement, such as disavowing authoritarianism and engaging in do-it-yourself projects, such as zines (informal, self-published magazines) (Morgan 2015: 123–124).

Overall, I subscribe to this attitude, but we should also discuss anarchism in terms of knowledge production in archaeology. The work of von Wright, Oakeshott, and Feyerabend denotes the idea that there is no method of obtaining knowledge that is superior to others, only different forms of knowledge that are subject to their own internal criteria. In epistemological terms, this means that justification and truth are not subject to a singular authority.

Rather than focusing too much on the integration and collaboration between disciplines, perhaps we should also focus in interdisciplinary research on different epistemological standards. Epistemology deals with the scope, nature, and origin of knowledge and ultimately what it means to say something is true or false. To a large extent, the notion of truth is still very much understood as scientific truth, even though there are multiple ways to arrive at truth in different disciplines and even outside the university context (e.g., law).

Conclusion

One of the inspirations for this article was investigative journalism, which I took the time to read while under lockdown during the onset of the Covid-19 pandemic. I was particularly impressed by the books *Catch and Kill* by Ronan Farrow (2019) and *Bad Blood* by John Carreyrou (2020). The first book deals with the investigation of Harvey Weinstein and the structure that he built to protect himself from lawsuits and prosecution, the second with the abuses of a Silicon Valley startup called Theranos, which promised to revolutionise the medical engineering industry. Besides the fascinating stories they tell, what struck me about both books was the jarring methods both Farrow and Carreyrou followed in order to attain the truth. Unlike archaeology, investigative journalism follows considerably more flexible standards. This is not to say that there are no rules in investigative journalism, because very strict rules do exist, especially given the nature of the accusations made by both Farrow and Carreyrou against the individuals and institutions they were investigating. But the objective of both was to get to the truth about those whom they were investigating. This type of truth, however, is not a scientific one, but nonetheless it is a truth that is as objective as scientific truth. The difference is not that investigative journalism arrives at a less valid form of truth than science, but that science tends to aim towards a more general truth, one that is transferable and can be tested or verified by more scientists.

The question we can now pose is what archaeology would look like if it followed the epistemic standards of investigative journalism? Would it still qualify as interdisciplinary? Ultimately, in archaeology we can define two tendencies in interdisciplinary research – the most prevalent one is the product of the "Third Science Revolution", that is, a streamlined form of research where natural scientific techniques are used to attain consilience. The other tendency favours the subversion of the subconscious authoritarianism of archaeological research and promotes the loosening of methodological shackles. Naturally, I cannot suggest any specific path of research, as that would contradict the anarchic spirit I commend in this paper. However, there are interesting paths that I personally would like to see explored in more depth, such as the use of literary techniques in archaeological writing, what we can learn from film theory in order to show and explain the past, or how archaeologists, besides being scientists, can also become detectives. The clues to conducting a methodologically anarchic archaeology have already been introduced (e.g., Morgan 2015; Ion 2017; Angelbeck et al. 2018; Crossland 2019; Sørensen 2019), and there is so much more we can discuss. It is now up to archaeology as a whole to decide whether to continue even further along the path of methodological streamlining or expand it to heights never before achieved.

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Inklusion in der Archäologie. Ein Vorwort

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Inklusion in der Archäologie. Ein Vorwort

Barbara Hausmair

Marginalisierung und Diskriminierung von Menschen aufgrund ihrer Herkunft, Religion, sexuellen Orientierung, ökonomischen Stellung, Alter, Geschlecht, oder aufgrund besonderer Körper sind in unserer Gesellschaft allgegenwärtig. Ausgrenzungsprozesse und die ihnen innewohnende Ungerechtigkeit samt der Herausbildung sozialer Ungleichheiten bleiben jedoch nicht unbeantwortet. Ihnen stehen Ermächtigungstendenzen benachteiligter Gruppen oder Bemühungen der Mehrheitsgesellschaften gegenüber, die eine gesellschaftliche Teilhabe aller zum Ziel haben: eine inklusive Gesellschaft (Hähn u. a. 2020).

Schon in der empirischen Soziologie Durkheims (1897) oder in Simmels formaler Soziologie (1908) fungieren Inklusion und Exklusion als Grundkategorien sozialer Ordnung, wobei hier Inklusion nicht als differenzierter Begriff im Sinne gleichberechtigter Teilhabe konzeptualisiert wird, wie er gegenwärtig im gesellschaftspolitischen Diskurs verstanden wird, sondern als ordnender Mechanismus der Gesellschaft. Dies steht im Gegensatz zu Luhmanns einflussreichen systemtheoretischen Überlegungen zum Verhältnis von Inklusion und Exklusion als antagonistischen Kräften, die einerseits die Teilhabe an verschiedenen gesellschaftlichen Subsystemen (Inklusion) bedingen, andererseits aber eine vollständige Integration in einzelne gesellschaftliche Subsysteme verhindern (Exklusion) (Luhmann 1998, 618–634). Denn die Diskussion in der Soziologie bewegt sich zunehmend weg von einem dialektischen Verständnis (Inklusion/Exklusion) hin zu einer Soziologie der Ungleichheiten, in der Inklusion und Exklusion nicht mutual exklusiv verstanden werden, sondern mitunter sogar kongruent sein können (Fitoussi und Rosanvallon 1998; Mascareño und Carvajal 2016; Stichweh 2016). Diese Entwicklungen in der Wissenschaftstheorie stehen in enger Verbindung mit einem an Einfluss gewinnenden politischen Inklusionsbegriff, der vom Ideal der gleichberechtigten Partizipation aller Menschen am gesellschaftlichen Leben geleitet ist, ohne jedoch Normen zu forcieren oder Unterschiede nivellieren zu wollen (Kuhlmann u. a. 2018).

Eine kritische Archäologie, die sich ihrer gegenwärtigen gesellschaftspolitischen Verantwortung bewusst ist und eine ethisch fundierte Forschung über die „Anderen“ der Vergangenheit entwickeln möchte, sollte sich stets mit Fragen nach Ungleichheit und Ungerechtigkeit befassen, sowohl in historischer Perspektive als auch im Hinblick auf Forschungs- und Vermittlungspraxis. Inklusion als Grundlage gesellschaftlichen Zusammenhalts, aber auch als Handlungsprämisse gegen Ungerechtigkeit und für die Stärkung einer solidarischen Gesellschaft stellt daher ein zentrales Thema dar. Doch welche Rolle spielt Inklusion eigentlich in der gegenwärtigen Archäologie?

Besonders die deutschsprachige Archäologie hat sich lange Zeit v. a. mit sozial mächtigen Gruppen oder Personen in vergangenen Gesellschaften befasst („Elitenforschung“, als Beispiel sei hier der Diskurs um „Fürstengräber“ in der Ur- und Frühgeschichte genannt, siehe Thrane u. a. 2010; im Gegensatz dazu Kienlin und Zimmermann 2012). Dass die Bildung von Eliten ebenso mit Prozessen von Inklusion (Wer ist/wird Teil einer privilegierten Gruppe?) und Exklusion (Wer ist/wird ausgeschlossen?) einhergeht wie die Formation von Randgruppen, wird jedoch selten explizit diskutiert. Erst in jüngerer Zeit werden Fragen nach sozialen Minderheiten und den Prozessen gestellt, die zu Ausschluss und Ausgrenzung führen (Bernbeck und Egbers 2019; AG Theorien in der Archäologie 2020). Vorwiegend erfolgt hier die Betrachtung aber durch die Linse der Exklusion: Minderheiten werden als Subalterne oder Außenseiter*innen konzeptualisiert, häufig gepaart mit einer Suche nach Distinktion und nicht normativen Mustern in den materiellen Hinterlassenschaften.

Beim digitalen Deutschen Archäologie-Kongress 2020 versuchten Cathrin Hähn, Judith Schachtmann und Barbara Hausmair unter dem Schirm der AG Wissenschaftsgeschichte bewusst einen Perspektivenwechsel und machten in ihrer Session „Inklusion in der Archäologie“ zum Thema (Hähn u. a. 2020, siehe ebenso Deutscher Archäologie-Kongress 2020, 3). Wie gegenwärtige Vorstellungen von „Andersartigkeit“ überhaupt zur Identifizierung von Minderheiten in archäologischen Kontexten führen, oder ob und wie Ermächtigungstendenzen von benachteiligten Gruppen oder inklusive Strategien einer Mehrheitsgesellschaft über die materiellen Hinterlassenschaften erforscht werden können, stand dabei ebenso zur Diskussion wie die Frage, wie Partizipation und Teilhabe von Minderheiten gegenwärtig in archäologischen Museen praktiziert werden und weiterentwickelt werden können.

Ziel der Session war es nicht, eine kohärente Theoriedebatte zum Begriff der Inklusion zu generieren, sondern zu eruieren, wie in der gegenwärtigen archäologischen Forschung und Museumspraxis überhaupt Inklusion gedacht wird und welchen Stellenwert sie hat. In der Session zeigte sich, dass in Museen Inklusion v. a. bei der Gestaltung von Angeboten für Menschen mit Behinderungen zum Thema wird, was die Relevanz der Teilhabe eines möglichst diversen Besucher*innenspektrums in Kultureinrichtungen hervorhebt, gleichzeitig Museen und Besucher*innen aber vor zahlreiche Herausforderungen stellt, die weit mehr beinhalten als den Abbau physischer Barrieren. Aber auch in der archäologischen Forschung kristallisierte sich Behinderung im Sinne unseres gegenwärtigen Verständnisses als bestimmendes Moment für die Frage nach Inklusion in der Vergangenheit heraus. Dieser Umstand ist ob der Tragweite des Inklusionsbegriffs in der Soziologie (s. o.) bemerkenswert, wie auch der Umstand, dass besonders bei Forschenden zum Thema Behinderung in der Vergangenheit ein hohes Bewusstsein herrscht, dass Behinderung als Strukturkategorie historisch kontingent ist und nicht notwendigerweise mit physischen oder kognitiven Besonderheiten von Menschen korrelieren muss. Im Wesentlichen spiegelt der deutschsprachige Diskurs – wie er sich bei der DAK-Session aber auch in der Publikationslandschaft zeigt (z. B. Hähn und Halle 2016; Kahlow 2019; Halle u. a. 2019) – hier internationale Trends, in denen Archäologien der Inklusion in der Dis/ability History (Bösl u. a. 2010; Burch und Rembis 2014; Nolte u. a. 2017) verwurzelt sind und der Forschungsfokus auf der Fürsorge für bzw. Teilhabe von Menschen mit Behinderungen im Sinne des modernen Medizinischen Modells von Behinderung liegt (z. B. Cross 1999; Hubert 2010; Southwell-Wright 2013; Schachtmann 2019). Besonders bioarchäologische Studien, die menschliche Überreste als Schnittstelle zwischen biologischen Gegebenheiten und kultureller Konstruktion untersuchen, dominieren hier international die Debatte (z. B. Hubert 2010; Byrnes und Muller 2017; Tilley und Schrenk 2017; Micarelli u. a. 2021/22).

Mit diesem Themenheft möchten wir der „Inklusion in der Archäologie“ im Forum Kritische Archäologie eine Plattform bieten. Die Beiträge stammen vorwiegend aus der DAK-Session und bilden dementsprechend die eben erläuterten Diskurse ab: eingeleitet von einer Erörterung zu Grundbegriffen und Entwicklungen der *Dis/ability History* und des Inklusionsbegriffs sowie deren Implikationen für eine inklusive Archäologie, befassen sich die Beiträge mit Fragen nach historischen Kategorien von Behinderung, Fürsorge und Inklusion in der Vergangenheit; mit den Erwartungen und Vorstellungen, die Menschen mit besonderen Bedarfen mit einem Museumsbesuch verbinden; und mit inklusiven Vermittlungskonzepten aber auch den damit verbundenen Herausforderungen, denen sich Museumsmitarbeitende und -gestaltende gegenüber sehen.

Als Standortbestimmung konzipiert, soll dieses Themenheft dennoch nicht nur den *status quo* der aktuellen Diskussion abbilden, sondern Impulse geben für eine künftige intensivere Auseinandersetzung mit Inklusion als Forschungsthema und als Leitmotiv für archäologische Praxis in Vermittlung, Lehre, Arbeit und Forschung. Denn Archäologie kann nur dann gesellschaftlich relevant sein, wenn sie möglichst viele Menschen in ihr Schaffen und ihre Forschungsfragen miteinbezieht.

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Inklusion und Archäologien. Möglichkeiten und Herausforderungen aus der Sicht der Disability History

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Inklusion und Archäologien. Möglichkeiten und Herausforderungen aus der Sicht der Disability History

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Abstract

This article discusses the impulses emanating from disability studies for the archaeological disciplines and the demands that the idea of inclusion places on the archaeologies. Despite all methodological difficulties, interdisciplinary research on antiquity can contribute to the knowledge of disability history if it develops a reflected bio-socio-cultural approach to the past. Making disability history a focus of research can also contribute to consolidating the idea of inclusion in archaeology. However, drawing attention to inclusion also places new demands on teaching and academic practice and the archaeological profession as a whole, as it equally affects communication and tpublic archaeology. Approaches and problems in this regard are outlined.

Keywords

Disability History, Disability Studies, accessibility, inclusion, bioarchaeology

Zusammenfassung

Der Beitrag diskutiert die Impulse, die von den Disability Studies auf die archäologischen Fächer ausgehen und die Anforderungen, die der Inklusionsgedanke an die Archäologien stellt. Trotz aller methodischen Schwierigkeiten kann eine interdisziplinär aufgestellte Altertumsforschung zum Erkenntnisstand der Disability History beitragen, wenn sie einen reflektierten bio-sozio-kulturellen Zugang zur Vergangenheit entwickelt. Die Geschichte von Menschen mit Beeinträchtigungen zum Forschungsgegenstand zu machen, kann auch dazu beitragen, den Inklusionsgedanken in den Archäologien zu festigen. Der Inklusionsauftrag stellt jedoch auch neue Forderungen an die Lehre und akademische Praxis, an das archäologische Berufsfeld, an Kommunikation und die Vermittlung archäologischer Inhalte. Diesbezügliche Ansätze und Probleme werden anhand von Beispielen skizziert.

Schlagwörter

Disability History, Disability Studies, Barrierefreiheit, Inklusion, Bioarchäologie

Anliegen und Vorgehensweise

Dieser Beitrag geht auf eine Keynote zurück, die im Rahmen des Digitalen Deutschen Archäologiekongresses die Sektion „Inklusion in der Archäologie“ eröffnete.[1] Eingenommen wird überwiegend die Perspektive der Disability History. Eingangs wird der politische Inklusionsbegriff vorgestellt. Im Mittelpunkt steht durchgängig die Kategorie Behinderung, wenngleich dies nur eine der Strukturkategorien ist, die der aktuelle Inklusionsbegriff einschließt. Im zweiten Schritt geht es um die Frage, wie Behinderung Gegenstand der archäologischen Forschung zu sein vermag und welche Impulse die sozial- und kulturwissenschaftlichen Disability Studies dazu liefern können. Die Archäologien können einen wesentlichen Beitrag zum Inklusionsgeschehen leisten, wenn sie die Geschichte von Behinderung mit in ihre Forschungen und in die Vermittlung archäologischer Themen an die Öffentlichkeit aufnehmen. An welchen anderen Bereichen können sich die Archäologien in struktureller und diskursiver Hinsicht um Inklusion bemühen? Diese Frage reißt der dritte Teil sehr grob an und thematisiert beispielhaft die Vermittlung archäologischer Wissensbestände sowie die Inklusionsanforderungen an Studium, Lehre und archäologische Tätigkeit und die wissenschaftliche Kommunikation.

Was ist Inklusion?

Die politische Zielsetzung lautet: Ungeachtet aller Unterschiede sollen allen Menschen Teilhabe, Selbstentfaltung, Lebenschancen und Geltung ermöglicht werden. Marginalisierung, Stigmatisierung und Diskriminierung sollen überwunden werden. Dies umfasst alle Bereiche des Lebens und der Gesellschaft, darunter die Menschen- und Bürgerrechte, die Leistungen des Sozialstaats, das Bildungssystem, aber auch barrierefreie Umweltgestaltungen und eine selbstbestimmte Lebensführung (Ziemen 2016: 101–102). Der Inklusionsauftrag bezieht sich keineswegs nur auf Menschen mit Behinderungen. Jedoch wird der Begriff in der deutschen Öffentlichkeit insbesondere seit dem Inkrafttreten der UN-Behindertenrechtskonvention (UN-BRK) 2009 sehr stark mit Behinderung in Verbindung gebracht.[2]

Das Ziel der UN-BRK ist die gleichberechtigte Teilhabe von Menschen mit Behinderungen am gesellschaftlichen Leben. Sie verknüpft Menschen-, Freiheits- und Sozialrechte. Sie soll außerdem dafür sorgen, dass die ältere, defizitorientierte Sichtweise auf Behinderung durch eine an Kompetenzen und Bedarfen ausgerichtete Betrachtungsweise ersetzt wird. Dahinter steht das sogenannte Soziale Modell von Behinderung, beziehungsweise seine aktualisierte Version, das Menschenrechtliche Modell (Degener 2015: 63–64). Das Soziale Modell geht auf die Emanzipationsbewegung von Menschen mit Behinderungen in Europa und den USA in den 1970er Jahren zurück. Ihr Anspruch war es, sich selbst auch auf wissenschaftlicher Ebene mit Behinderung auseinanderzusetzen, statt das wie bisher v. a. der Medizin, der Rehabilitationswissenschaft, der Psychologie und der Pädagogik zu überlassen. So entstanden aus der Bewegung die sozial- und kulturwissenschaftlichen Disability Studies (Shakespeare 2015; Hartwig 2020; Waldschmidt 2020). In den Disability Studies hat sich ein historisch arbeitender Zweig etabliert, die Disability History (Bösl und Frohne 2022).

Der sozialkonstruktivistische Erklärungsansatz des Sozialen Modells besagte, dass Behinderungen in einem komplizierten Zusammenspiel von Wissenschaft, Gesellschaft, Politik, Ökonomie und Kultur entstehen (Longmore 1985; Oliver 1990; Abberley 1996; Zola 2004) – und dass Behinderung zwar etwas mit wahrnehmbaren verkörperten Unterschieden zu tun hat, aber nicht identisch mit diesen ist. Es gibt körperliche, kognitive oder psychische Merkmale oder Zustände, die Menschen beeinträchtigen, aber Behinderungen entstehen erst in der Gesellschaft durch materielle Hindernisse und Einschränkungen, durch Benennung und Symbolik, durch Diskurse und Praktiken. Mit diesem Modell grenzten sich die Emanzipationsbewegung und die in ihrem Kontext entstehenden wissenschaftlichen Disability Studies von dem damals in Wissenschaft und Politik herrschenden medizinischen Erklärungsmodell ab, das Behinderung zum individuellen, körperlichen oder psychischen Defizit erklärte. Während dieses Medizinische Modell das Problem im Individuum vermutete, verortete das Soziale Modell es nun in

[1] Ich danke den Organisatorinnen der Sektion für die Einladung und den anonymen Gutachter:innen, deren Vorschläge mir sehr dabei halfen, aus dem verschriftlichten Vortrag einen Aufsatz zu machen.

[2] Die UN-Behindertenrechtskonvention (Übereinkommen über die Rechte von Menschen mit Behinderungen) wurde am 13. Dezember 2006 von der Generalversammlung der Vereinten Nationen verabschiedet. Die Europäische Union und die BRD unterzeichneten das völkerrechtlich bindende Übereinkommen am 30. März 2007. In Deutschland trat die BRK am 26. März 2009 in Kraft; vgl. Welke 2012.

der Gesellschaft. Mit dem Medizinischen Modell waren in der Behindertenpolitik der Bundesrepublik und vieler anderer westlicher Staaten die Leitbegriffe der Wiedereingliederung und später der Integration einhergegangen. Sie besagten, dass Menschen mit Behinderungen mithilfe von medizinischen, sozialstaatlichen und pädagogischen Hilfen an den ‚normalen' Lebensvollzügen der Gesellschaft beteiligt werden sollten, der sie noch nicht oder nicht mehr anzugehören schienen. Von dieser stark an den vermeintlichen Defiziten des oder der Einzelnen orientierten Betrachtungsweise setzt sich der heute gebräuchliche Begriff der Inklusion ab.

Inklusion hat die Umgestaltung des Lebens in der Gesellschaft insgesamt zum Ziel. Sie ist deshalb eine Daueraufgabe. Da sich die Gesellschaft laufend wandelt – in ihrer Altersstruktur, durch Zu- und Abwanderung, durch die wirtschaftliche Entwicklung, in ihren Kommunikationsweisen etc. –, ändert sich auch der Inklusionsauftrag. Kontinuierlich entstehen neue materielle und nicht-materielle Hindernisse, die zu Exklusion führen können (Schillmeier 2007: 195–208) und abgebaut werden müssen, um Inklusion zu verwirklichen. Ebenso ändern sich die Belange und Bedarfe von Menschen.

Durch den Inklusionsgedanken sind für viele gesellschaftliche Institutionen und Instanzen neue, vielschichtige Herausforderungen entstanden (Degener und Diehl 2015: Teile 2 und 3). Das gilt auch für die Bereiche Kultur, Wissenschaft und Forschung. Um einige dieser Herausforderungen geht es in diesem Aufsatz.

Disability History, archäologische Forschung, Disability Studies

„Disability is central to understanding history", ist in der Einleitung einer neueren Anthologie der US-amerikanischen Disability History zu lesen (Burch und Rembis 2014: 1). Aspekte dessen, was die Disability History als Beeinträchtigung oder Schädigungen bezeichnet, und Menschen, die damit lebten, hat es in der Vergangenheit der Menschheit wohl immer gegeben. Dennoch hat sich die historische Forschung ihrer lange Zeit kaum angenommen. In den bisherigen europäischen Geschichtsnarrativen sind Menschen, die wir heute als Menschen mit Behinderungen bezeichnen würden, kaum vertreten. Das liegt nicht zuletzt an der Begrenztheit der Quellen und epistemischen Ressourcen. In den traditionellen Quellen der Geschichtswissenschaft kommt ‚Behinderung' auf den ersten Blick kaum vor – bzw. sind Rechercheenergie und Kreativität gefragt, um relevante Bestände zu entdecken. Lange nahm die Geschichtswissenschaft zudem vorrangig die Perspektive von Institutionen und Organisationen z. B. des Gesundheits- und Bildungswesens, aber auch der Wissenschaft und der Obrigkeit ein und rückte entsprechend Top-down-Prozesse in den Mittelpunkt. Die Menschen selbst, von herausgehobenen Persönlichkeiten abgesehen, und ihre Alltage und Erfahrungen blieben weitgehend unterbelichtet. Doch sie haben auch eine Geschichte – oder besser: viele Geschichten.

In den 1970er Jahren begannen einzelne Mitglieder der Behindertenbewegungen in den USA und Europa die Geschichte von Behinderung ‚von unten'[3] zu erforschen (Koestler 1976; Gannon 1981; Sierck und Radtke 1984; Fandrey 1990). Sie wollten ihre eigene Sicht auf Behinderung deutlich machen und erreichen, dass Behinderung eine eigene Geschichtlichkeit zuerkannt wurde. Das war advokatorisch gedacht. Menschen mit Behinderungen sollten in der Vergangenheit sichtbar gemacht werden. Außerdem sollte die Untersuchung der Vergangenheit Orientierungswissen liefern, um gegenwärtige Phänomene von Ausgrenzung und Teilhabe einordnen zu können. Doch schon in den 2000er Jahren genügten solche kompensatorischen Geschichtserzählungen nicht mehr (Kudlick 2003). Die Vertreter:innen der sich herausbildenden Disability History forderten, *Disability* stattdessen als Analysekategorie einzusetzen, um ganze Gesellschaften an sich zu erforschen. Nun nahm die Disability History heutiger Prägung Format an (Bredberg 1999; Baynton 2006). Die Grundannahme lautet, dass man viel über eine Gesellschaft erfährt, wenn man ihren Umgang mit einer bestimmten Kategorie menschlicher Unterschiedlichkeit untersucht (Longmore und Umansky 2001: 15). Es geht also nicht darum, historische Behindertenforschung zu betreiben, sondern um die Analyse der Gesellschaft selbst, um ihre Wissensordnungen, Institutionen, Normen und Denkweisen, Deutungen, also um diverse Aspekte der materiellen und der nicht-materiellen Welt (Waldschmidt 2010: 19).

Das Forschungsfeld ist auch im deutschsprachigen Raum inzwischen gut etabliert. Davon zeugen Literaturberichte, Handbücher und Einführungen ebenso wie der stetig wachsende Forschungsstand (Bösl u. a. 2010; Barsch u. a. 2013; Lingelbach und Schlund 2014; Nolte u. a. 2017), wenngleich die Forschungsintensität in den USA ungleich

[3] Ähnlichkeiten zur Frauengeschichtsschreibung der 1970er und 1980er Jahre sind deutlich; vgl. Opitz 2005.

höher ist. Typischerweise treten in der historischen Empirie In- und Exklusionsphänomene miteinander verwoben auf (Uerlings und Patrut 2013: 9), zeigen sich Gleichzeitigkeiten von Aus- und Einschluss, Teilhabe und Nicht-Teilhabe, Geltung und Irrelevanz.

Die Vormoderne und insbesondere die vorschriftlichen Epochen der Menschheitsgeschichte rückten erst in den letzten Jahren in den Blick. Die Quellenlage galt lang als zu schwierig, doch die Mediävistik zeigt immer deutlicher, dass es relevante Quellen auch aus der Vormoderne gibt (Nolte u. a. 2017). Dennoch herrscht weiterhin Skepsis, ob es möglich ist, die Perspektiven der Disability History auf noch weiter zurückliegende Epochen auszudehnen.

Ein methodisches Problem besteht darin, dass sich die heute genutzten, wissenschaftsbasierten WHO-Klassifikationen von Behinderung oder der medial vermittelte Kollektivbegriff ‚behindert' nicht ohne Weiteres auf die Vergangenheit anwenden lassen. In zeitgeschichtlichen Untersuchungen können solche Begriffe als relativ eng umgrenzte medizinische, rechtliche oder soziale Kategorien operationalisiert werden (Nolte 2013: 346–348; Frohne 2017). Für Epochen vor der Moderne, ja vor dem 19. Jahrhundert, helfen diese Begriffe und Klassifikationen nur wenig weiter. Sie entstanden erst seit der Aufklärung und haben ihre eigene komplexe Begriffsgeschichte. Behinderung muss als kontingent und historisch verstanden werden. Heutige Begriffe beschreiben also nicht adäquat die Varianten und Möglichkeiten des Umgangs mit menschlicher Unterschiedlichkeit, die bei der Untersuchung älterer Zeitstufen zum Vorschein kommen. Doch können sie auch dort als erkenntnisleitende, heuristische Kategorie benutzt werden (Horn und Frohne 2013; Frohne und Nuckel 2017), wenn es darum geht soziale Situationen, menschliche Existenzweisen und kulturelle Bewertungen usw. daraufhin zu untersuchen, ob sich etwas darüber sagen lässt, wie menschliche Gemeinschaften mit Unterschieden, mit Schädigungen oder Beeinträchtigungen umgegangen sind.

Ohne Zweifel, viele der aktuellen Fragestellungen der Disability History lassen sich für länger zurückliegende Epochen kaum verfolgen. Je näher die Epoche zur Gegenwart liegt, desto mehr Quellen sind verfügbar und desto größer ist in der Regel deren Bandbreite. Das verbessert die Chancen, sich z. B. mit Wissensordnungen und den Vorstellungen der jeweiligen Zeit über Ästhetik und Funktionalität auseinandersetzen zu können. Je mehr schriftliche und Bildquellen vorliegen, desto einfacher wird es, den medizinischen, pflegerischen, seelsorgerischen oder magischen Interventionen nachzugehen sowie den Institutionen, die diese praktizierten. Ähnliches gilt für die Erforschung der alltäglichen Aktivitäten einschließlich der Arbeit.

Wenngleich natürlich alles Quelle sein kann, das die Vergangenheit repräsentiert, und wenngleich gerade die Disability History beweist, dass man nicht vorschnell aufgeben sollte, wenn in den Quellen Behinderung scheinbar nur als Leerstelle vorkommt, ist ein Großteil der aktuellen Erkenntnisinteressen der Disability History wohl nur mit schriftlichen Quellen oder Bildquellen bearbeitbar. Dies gilt besonders für das Anliegen, Menschen als Handelnde und Subjekte der Geschichte zu untersuchen (Blackie 2010; Schattner 2012; Vanja 2013; Scalenghe 2014). Auch Partizipation, Geltung und Status, insbesondere in intersektionaler Perspektive, lassen sich leichter untersuchen, wenn man eine Fülle von Quellen unterschiedlicher Art und Provenienz zur Verfügung hat. Doch auch auf der Basis archäologischer Funde und Befunde kann Disability History gelingen.

Auch wenn ihre epistemischen Optionen oft begrenzt sind, können Mediävistik, Alte Geschichte und Archäologien zu den Forschungen der Disability History beitragen und sich dabei vom Theoriestand und Fragestellungen der Disability Studies inspirieren lassen (Cross 1999; Finlay 1999; Roberts 1999; Southwell-Wright 2013; Shuttleworth und Meekosha 2017).

Die Altertumswissenschaften können den Disability Studies sogar als Korrektiv gegenüber treten, denn noch trifft man dort mitunter auf die Vorstellung von einer ‚behinderungslosen' vorindustriellen bzw. vormodernen Zeit. Sie entstand wohl, weil das Soziale Modell in seiner Frühzeit Behinderung stark auf den Industriekapitalismus zurückführte: Menschen schienen vorrangig vom ökonomischen und politischen System, von (sozial-)bürokratischen Praktiken und von Produktionsverhältnissen und materiellen Barrieren behindert zu werden. Erwerbsarbeit nahm eine wesentliche Stellung im Sozialen Modell ein (Oliver 1990; Abberley 1996; Gleeson 1997; Barnes u. a. 1999; Barnes und Mercer 2005). Das führte zu der Annahme, dass in Epochen, in denen Arbeit eine andere gesellschaftliche Rolle spielte, wie etwa in der Subsistenzwirtschaft, Behinderung so nicht stattgefunden habe, weil Arbeitsfähigkeit kein wesentliches Unterscheidungskriterium gewesen sei (Nolte 2013: 11–12).

Inzwischen haben aber quellen- und theoriegesättigte Studien zur europäischen Antike, zum Mittelalter und zur Vormoderne aufgezeigt, dass der gesellschaftliche Umgang mit ‚anderen' Menschen vielschichtig und voller Varianten war. Zudem wurde deutlich, dass schon das Unterscheiden selbst und die Vorstellungen vom ‚Anderen' oder ‚Auffälligen' geschichtlich sind. Aus diesen Studien geht hervor, dass die Idee einer behinderungslosen Vormoderne zu einfach ist (z. B. Anderson und Haydon 2020; Hsy u. a. 2020; Laes 2020).

Archäolog:innen haben sich in den letzten zwei Jahrzehnten vermehrt der Erforschung von Ungleichheiten und Identitäten zugewandt und dabei nicht nur Kategorien wie Geschlecht und Alter in den Blick genommen (Müller 2005; Burmeister und Müller-Scheeßel 2006; Arnold 2007; Hofmann 2014; Moraw und Kieburg 2014; Fries u. a. 2017), sondern auch Behinderung.

Sowohl die Gräberarchäologie (Murphy 2008; Roberts 2009) als auch die Siedlungsarchäologie und Baugeschichtsforschung standen Funde zur Verfügung, die das ermöglichen (Kahlow 2009; 2020). Anthropologie, Osteologie und Paläopathologie sind dabei seit vielen Jahren Partnerinnen der Archäologien und umgekehrt (Mays 1996; Roberts 2000; Manchester und Roberts 2007). Von Bioarchaeology[4] ist im angelsächsischen Raum die Rede, wenn sowohl die biologische als auch die kulturelle und soziale Entwicklung und Diversität vergangener Bevölkerungen untersucht werden (Byrnes und Muller 2017; Roberts 2017). Identitäten, ein Kernkonzept der Bioarchaeology (Knudson und Stojanowski 2010), werden entlang moderner Analysekategorien wie Alter, Behinderung, Geschlecht, Ethnizität und durchaus im Anschluss an den Theoriestand der Gender Studies, Disability Studies, Race and Ethnicity Studies u. a. erforscht. Die US-amerikanische Historical Archaeology wiederum widmet sich u. a. Fragestellungen, die sie aus der Disability History aufgreift, und versucht, sich Handlungsspielräumen, Erfahrungen und Agency archäologisch zu nähern (z. B. Muller 2017).

Insgesamt sind aber erstens die Erkenntnismöglichkeiten begrenzt und zweitens gibt es kritische Stimmen, die fragen, ob Anthropologie und Archäologien überhaupt etwas zum Stand der Disability Studies beitragen können (Southwell-Wright 2013). Ein beträchtliches methodisches Problem besteht darin, dass körperliche Überreste von Menschen einen Großteil der verfügbaren Quellen darstellen. In der Gräberarchäologie trifft man bei zehn bis fünfzehn Prozent der Individuen der meisten Zeitstufen und Regionen auf osteologische Auffälligkeiten, die man als pathologisch bezeichnen kann (z. B. Halcrow u. a. 2020). Mit osteologischen und jüngst mitunter auch archäogenetischen Verfahren (Anderson 1994; Bramanti u. a. 2003; Ulrich-Bochsler 2009; Schuenemann u. a. 2013) lässt sich diese physische Dimension untersuchen. Doch selbst das ist von begrenzter Aussagekraft, da sich nur ein Teil aller Krankheiten oder Schädigungen am Skelett manifestieren. Über Sinnesbehinderungen oder kognitive und seelische Beeinträchtigungen kann die Osteologie in der Regel keine Auskunft geben (Jeffreys und Tait 2000). Mit aDNA-Analyseverfahren lassen sich im besten Fall pathogene DNA, also die DNA von Krankheitserregern, bzw. möglicherweise manche genetisch bedingten Krankheiten oder Beeinträchtigungen nachweisen. Dafür ist jedoch eine Ausgangshypothese nötig, die auf morphologischen Daten oder auf archäologischen bzw. historischen Quellen beruht. Eine soziokulturelle Interpretation der menschlichen Überreste allein ist kaum vorstellbar.

In den Disability Studies möchte man aber das Physische nicht so stark betont sehen und beargwöhnt pathologisierende Zugänge, weil diese das Risiko bergen, das Medizinische Modell von Behinderung auf die Vergangenheit zu übertragen. Aus der Perspektive der Disability Studies ist das, was sich mit morphologischen oder biochemischen Methoden feststellen lässt, nicht Behinderung im heutigen Sinn, sondern nur ein biowissenschaftlich oder medizinisch fassbares Merkmal. Würde jemand auf der Basis biologischer Verfahren also etwas Plakatives über ein ‚behindertes Individuum' z. B. aus dem Neolithikum erzählen, könnte das zu dem Missverständnis führen, dass Behinderung doch etwas Universelles ist.

Diese Sorge ist berechtigt. Aber ist es richtig, deshalb auf die Beiträge und Perspektiven der biologischen Fächer und die archäologischen Funde menschlicher Überreste zu verzichten? Zielführender dürfte sein, eine intensive überfachliche Kooperation von Kultur- und Biowissenschaften zu gewährleisten, die solche Probleme und Missverständnisse gar nicht erst entstehen lässt (Southwell-Wright 2013). Wo er möglich ist, bietet sich der überfachliche Zugang an, um eine möglichst große Bandbreite von Quellen und Methoden heranziehen zu können (Finlay 1999; Roberts 1999; Knudson und Stojanowski 2008: 415; Crawford und Lee 2010. 2014; Muller 2020: 203).

[4] Mit Bioarchaeology ist die Verknüpfung naturwissenschaftlicher, z. B. morphologischer und biochemischer Verfahren, Quellen und Daten mit den Verfahren, Quellen und Daten der Archäologie gemeint – und zwar unter einer Fragestellung, die auf den Menschen der Vergangenheit als biologisches, soziales und kulturelles Wesen mit einer Vielfalt von Identitäten und Lebensvollzügen gerichtet ist.

Kooperatives, fachübergreifendes Forschen bringt zwar jede Menge Herausforderungen mit sich, aber angesichts der Komplexität des Themas ist es sinnvoll.

Wichtig ist, dass alle Beteiligten dabei reflektiert mit den pathologisierenden Begriffen umgehen, denn auf diese kann nicht ganz verzichtet werden. Ohne sie sind weder die bioarchäologische Forschung noch ein darüber hinausführender soziokultureller Zugang zu Behinderung in der Altertumsforschung vorstellbar (Pavel 2013: 4). Ohne die körperliche Dimension anzusprechen, lässt sich die soziokulturelle Dimension von *Disability* in der Vormoderne kaum erforschen:

> „The determination of pathology, or in more biodiversity sensitive terms variant human corporeality, in human skeletal remains from archaeological sites and the assessment of probable functional impact is a necessary initial step in an inquiry process – one that can eventually lead to critical analysis and interpretation of disabling or abling responses within the historical, social and cultural contexts of an individual's life." (Shuttleworth und Meekosha 2017: 2)

Offen sollten die Angehörigen der beteiligten Fächer dann über die jeweiligen Möglichkeiten und Grenzen ihrer jeweiligen Zugänge diskutieren. Bei aller Skepsis gegenüber retrospektiven Diagnosen lässt sich beispielsweise aus heutigem medizinischen Wissen mitunter vorsichtig einschätzen, wie sich die festgestellte Pathologie für den jeweiligen Menschen auswirkte, d. h. ob sie Schmerzen verursachte, oder bei welchen Tätigkeiten sie die Person einschränkte. Manchmal lässt sich plausibel machen, welche Unterstützung oder Versorgung jemand benötigte (Buikstra 2017). Im Erwachsenenalter verstorbene Individuen mit hochgradigen Lippen-Gaumen-Kiefer-Spalten beispielsweise hätten ohne Zuwendung das Säuglingsalter nicht überlebt (Anderson 1994; Hawkey 1998; Manchester und Roberts 2007: 51–56). An solchen Pathologien setzt der *Index of Care* an (Tilley und Cameron 2014; Tilley und Schrenk 2017): Das Ziel ist, zu beurteilen, welche Care-Bedarfe eine Person hatte und welche sie wahrscheinlich erhielt, um im nächsten Schritt überlegen zu können, wie die Care-Arbeit in der jeweiligen Gemeinschaft wohl organisiert war und welches Wissen dafür verfügbar war (Tilley und Oxenham 2011). Für manche Zeitstufen lassen sich zusätzlich Hospital- und Klosterarchitektur, medizinische Instrumente oder Schriftquellen heranziehen. Viele Fragen zum Alltag und zu den sozialen Beziehungen rund um Care bleiben aber offen (Shuttleworth und Meekosha 2017: 32; Chamoun 2020: 37).

Selbst wenn es gelingt, plausibel zu machen, welche individuellen physischen Konsequenzen eine Verletzung, ein Mangelzustand oder eine altersbedingte Degeneration hatte, lässt sich das in aller Regel kaum weiter interpretieren (Dettwyler 1991). Es fehlt an Aussagemöglichkeiten zu Status, Partizipation usw. (Strott u. a. 2007; Pavel 2013). Zwar kann die Gräberarchäologie die anthropologischen Befunde in Bezug zu Artefakten und Bestattungssitten setzen, die Auskunft über Gesellschaft und Kultur geben können (Shuttleworth und Meekosha 2017: 27), doch nur unter der Einschränkung, dass die Bestattungssitten nicht zwingend das Leben des Individuums spiegeln, sondern eher das, was die Lebenden über sich und die Toten aussagen wollten (Fahlander und Oestigaard 2008: 5, 7, 11; Hofmann 2009: 143–151; Hausmair 2015: 14–19, 37–47). Ein großes Problem stellt die Frage dar, wie Sonderbestattungen zu beurteilen sind. Lassen sich aus ihnen belastbare Aussagen über Rollen, Deutungsweisen oder die Vermischung von Kategorien wie Behinderung, Geschlecht und des sozialen Status einer Gesellschaft ableiten (Pavel 2013)?

So vielversprechend ein bio-sozio-kultureller Zugang auch ist, er führt unweigerlich zu der schwierigen Frage, wie man die jeweiligen Konzepte der Fächer zueinander in Beziehung setzt. Solche Konzepte sind Ergebnisse langer fachinterner Aushandlungsprozesse und werden häufig auch als Charakteristikum des Faches betrachtet. Mithin ist es hilfreich, sich mit der Geschichte der beteiligten Wissenschaften auseinanderzusetzen und zu fragen, warum sie bestimmte Begriffsverständnisse pflegen und andere zurückweisen.

Zentral im Hinblick auf die Geschichte von Behinderung ist die Frage, wie man paläopathologische und archäologische Befunde miteinander interpretieren soll und welche Begriffe dann zulässig sind, wenn Behinderung nur als erkenntnisleitende Kategorie verwendet werden sollte. Die angelsächsische Bioarchaeology behilft sich z. B mit einer Trennung von *Impairment* und *Disability* (Dettwyler 1991; Knudson und Stojanowski 2008: 408). Auch in der Mediävistik wird *Impairment*[5] mitunter im Sinne des Sozialen Modells als ‚beeinträchtigte' Körperlichkeit und ‚beeinträchtigender' Zustand und *Disability* als soziale Konstruktion verstanden. Doch wurde entgegengehalten, dass auch *Impairment* nicht biologisch gegeben, sondern bereits sozial vermittelt ist (Eyler 2010; Singer 2011). Aus den kulturwissenschaftlichen Disability Studies kommt der Vorschlag, sich mit dem Begriff der verkörperten

[5] *Impairment* ist schwer ins Deutsche zu übertragen und wäre nach Irina Metzler „[…] the physical condition and disability the social construction of an impairment" (Metzler 2006: 3).

Differenz (*embodied difference*) zu behelfen (Waldschmidt 2006: 32), und, ohne schon von Beeinträchtigung oder Behinderung zu reden, zu untersuchen, welche Folgen diese Differenz für das Individuum und für die Gesellschaft hatte. Bei *Embodied Difference* ist das Physische zunächst nur ‚anders' – das passt zu den Befundmöglichkeiten der Paläopathologie und Anthropologie – und es ist offengelassen, ob mit der Andersheit eine Beeinträchtigung oder Einschränkung einher ging.

Ein anderer Weg wäre, auch das Körperliche als historisch und kulturell variabel aufzufassen, nicht einfach als vorsoziale oder universale Gegebenheit. Körperlichkeit kann vielmehr als Faktor im historischen Prozess verstanden werden. Die materiellen Dimensionen dieses Prozesses sind auch in schriftlosen Epochen mitunter erfassbar. Je dichter die Quellenlage wird, desto einfacher fällt es dann, das Materielle, die Diskurse, die Strukturen und subjektiven Erfahrungen in ihren Beziehungen zueinander zu untersuchen.

Ein anderer Vorschlag geht dahin, menschliche Unterschiede als Form von Biodiversität über die Zeiten hinweg zu untersuchen, ohne eine Wertung vorzunehmen (Garland-Thomson 2012. 2015). Das wäre auf alle Zeitstufen und Gesellschaften anwendbar und könnte das Labeling vermeiden. Ein Risiko besteht darin, dass eine auf diesem Begriffsverständnis aufbauende Fragestellung zu vage gerät, um operationalisierbar zu sein. Wenn Diversität zu breit gedacht ist, erschwert es der Biodiversitätsansatz, der Frage nachzugehen, ob die heute mit der Kategorie Behinderung verknüpften Machtunterschiede auch in der Vergangenheit anzutreffen waren.

Trotz solcher methodischen Einschränkungen und der Schwierigkeiten überfachlichen Forschens können die Vergangenheitswissenschaften durchaus zum Erkenntnisstand der Disability Studies beitragen. Wenn die Archäologien die Geschichte von Menschen mit Beeinträchtigungen mehr als bisher berücksichtigen, haben sie die Chance, als Wissenschaft ihrem Inklusionsauftrag auf der inhaltlichen Ebene näher zu kommen. Der Inklusionsgedanke betrifft jedoch auch eine Vielzahl anderer Bereiche des archäologischen Arbeitens, die im Folgenden schlaglichtartig beleuchtet werden sollen.

Archäologien inklusiv? Aspekte von Vermittlung, Kommunikation und Praxis

Der Inklusionsauftrag der UN-Behindertenrechtskonvention ist sehr klar (Degener und Diehl 2015). Das heißt aber nicht, dass er einfach umzusetzen ist – weder auf der diskursiven noch auf der strukturellen Ebene. Als akademischer Bereich und Profession mit vielen Schnittstellen zur Öffentlichkeit hat die Archäologie viele Bedarfe und Interessen zu berücksichtigen.

Besonders offenkundig ist dies im Bereich der musealen Vermittlung. Dort besteht immer wieder von Neuem Anlass, die Einrichtungen und Angebote daraufhin zu überprüfen, wie inklusiv sie sind – und für wen.[6] Dasselbe gilt z. B. für Stadtführungen und Schaugrabungen, denn die Geschichte des barrierefreien Planens und Bauens der letzten fünf Jahrzehnte zeigt, dass immer wieder neue Hindernisse entstehen oder als solche erkannt werden – je nach dem, wessen Perspektive man einnimmt (Imrie 1996; Bösl 2012). Inzwischen gibt es zahlreiche Mindeststandards für *Accessibility* im physischen Sinn, und viele Angebote berücksichtigen das Zwei-Sinne-Prinzip.[7] Die kognitive und emotionale Zugänglichkeit solcher Angebote wird hingegen noch deutlich weniger beachtet (Stringer 2014).

Zudem konnten sich bisher Menschen mit Behinderungen selbst nur an wenigen Projekten und Planungen beteiligen (Philipps und Gilchrist 2012): Eine Ausnahme stellt das Ausstellungsprojekt der Bundeskunsthalle „*Touchdown*" über Geschichte und Gegenwart des Down-Syndroms dar.[8] Partizipative Ansätze einer inklusiven Ge-

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[6] Vgl. einführend und mit Best-Practice-Beispielen aus dem Museumsbereich die Beiträge von Ursula Wallbrecher (2015) und Siegfried H. X. Saerberg (2015) in Degener und Diehl 2015.

[7] DIN 18040-3 fordert für die barrierefreie Nutzung des öffentlichen Verkehrs- und Freiraumes eine Informationsübermittlung, die mindestens zwei der drei Sinne Sehen, Hören und Tasten anspricht. Dasselbe gilt laut DIN 18040-1 und 2 für Räume innerhalb von Wohnungen und Gebäuden. Die Informationen von Leitsystemen und Indikatoren zur Orientierung müssen für mindestens zwei Sinne wahrnehmbar sein. Für den Museumsbereich kann das Prinzip analog verwendet werden. Um auch Menschen mit kognitiven Beeinträchtigungen einen barrierefreien Museumsbesuch zu ermöglichen, sollten Informationen leicht begreifbar und gut zu merken sein, bzw. Schrift- und Sprachinformation in einfacher Sprache wiedergegeben werden und Schriftliches auch als gesprochener Text zur Verfügung stehen.

[8] Menschen mit dem Down-Syndrom haben an der Forschung, Gestaltung und Museumspädagogik mitgearbeitet. Ein anderes partizipatives Beispiel bei Plangger und Schönwiese 2013; Flieger und Schönwiese 2015.

schichtsvermittlung mündeten 2012 in Bremen in die interdisziplinäre Ausstellung „LeibEigenschaften“[9] (Nolte 2012; Köbsell 2015). Das laufende Projekt „*Museum Signers*“ ist zugleich ein Qualifizierungsangebot für Menschen mit Hörbehinderung und der Versuch, die Verfügbarkeit von Museumsführungen in Deutscher Gebärdensprache zu verbessern (Gehörlosenverband München und Umland 2021). *Native Signers*, also Menschen, deren Muttersprache die Deutsche Gebärdensprache (DGS) ist, lassen sich für die Rundgangsleitung ausbilden. Sie bauen Führungen grundständig in DGS auf, statt aus der Lautsprache zu übersetzen, was einer Fremdsprachenübersetzung gleichkäme.[10] Da allerdings die bisher ausgebildeten Guides keine Fachleute für das Themengebiet und die Museumspädagogik sind, befürchten die Inklusionsbeauftragten verschiedener Museen, dass die Qualität der Führungen sinken könnte. Der Inklusionsgedanke verlangt aber, dass Kultur nicht nur für alle, sondern für alle gleich gut und professionell vermittelt wird. Andernfalls könnte eine neue Form von Benachteiligung entstehen.

Meinungsverschiedenheiten gibt es in der Frage, ob bei der Konzeption von Ausstellungen oder Museumsangeboten vorab erhoben werden sollte, welche Themen oder Exponate für Menschen mit Behinderungen besonders interessant sind. Manche Menschen möchten sich ausdrücklich mit Dingen auseinandersetzen, die mit Behinderung zu tun haben, andere wiederum empfinden schon die Frage danach als diskriminierend: Warum sollten sie sich für etwas anderes interessieren als alle anderen Menschen? Diese Frage kann man auch an die wenigen partizipativen Forschungs- und Ausstellungsprojekte richten, die es bisher gibt (m. w. N. aus den USA Muller 2020: 208–209).

Eine Reihe von zivilgesellschaftlichen Initiativen in Großbritannien und den USA versuchen den Inklusionsgedanken in der Archäologie umzusetzen, indem sie feldarchäologische Projekte mit Menschen mit Behinderungen organisieren. Hier geht es nicht um partizipative Forschung, sondern die Grabungen werden ausdrücklich als Instrument der Therapie und sozialen Teilhabe verstanden (Winterton 2014; Dobat u. a. 2020; Everill u. a. 2020). Die britische Organisation Soldier On! warb dafür auf ihrer Website:

> „Welcome to Soldier On! We organise heritage-based projects for vulnerable or disadvantaged people, designed to: improve well-being, build community-cohesion, remove social barriers, benefit personal development, (specifically employability), contribute to knowledge and historical interest preservation.“ (Soldier On! 2020)

Über die Zusammenarbeit zwischen dem US-amerikanischen National Park Service und der Organisation American Veterans Archaeological Recovery (AVAR) hieß es 2018:

> „American Veterans Archaeological Recovery (AVAR) uses archaeology projects to help veterans find a new sense of mission and purpose, build community, and learn vocational skills. AVAR has put over 60 veterans on excavations in the USA, UK, and Israel since inception, thanks to a National Geographic Education grant.“ (Saratoga National Historical Park New York 2018)

AVAR selbst bezeichnete 2020 ihre Projekte als *Rehabilitation Archaeology*:

> „AVAR terms this emerging field as Rehabilitation Archaeology, defined as the adaptation of fieldwork to generate consistent, positive long-term, personal and professional outcomes for participants.“ (AVAR 2021)

Daneben gibt es in Großbritannien im Bereich des Denkmalschutzes auch Projekte, die den Inklusionsgedanken und Citizen Science zu verbinden suchen, indem sie an einer *Archaeology for All* arbeiten (Philipps und Gilchrist 2012: 677).

Der akademischen Archäologie möchten diese Projekte und Initiativen signalisieren, dass die (tatsächlichen oder vermeintlichen) körperlichen Anforderungen der Feldarchäologie und die hohe Visualität der Archäologien nicht mehr per se als Begründung dafür taugen dürfen, warum so wenige Menschen mit Behinderungen ein Archäologiestudium absolvieren oder archäologisch arbeiten (Philipps und Gilchrist 2012: 674, 684). Nicht nur tatsächliche materielle Hindernisse stehen dem Inklusionsziel im Weg, sondern vor allem auch gedankliche.

Wie zugänglich die Archäologien als Studienfächer und Tätigkeitsbereich für Menschen mit Behinderungen derzeit sind, lässt sich für Deutschland empirisch nicht sagen, da es keine Statistiken gibt. Für den angelsächsischen

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[9] Der partizipatorische Ansatz bestand darin, dass ein Beirat aus Menschen mit verschiedensten Beeinträchtigungen und Perspektiven die Ausstellung mit den Forschenden gemeinsam plante.

[10] Die Landesstelle für die nichtstaatlichen Museen in Bayern, das Kulturreferat der Landeshauptstadt München und der Gehörlosenverband München und Umland e.V. führen das Projekt durch. Letzterer hat die Federführung. Damit findet eine bewusste Umkehrung der früher typischen Arbeitsteilung statt, bei der öffentliche Stellen und nichtbehinderte Fachleute planten und entschieden, während Menschen mit Behinderungen maximal angehört wurden.

Bereich haben entsprechende Studien im Lauf der letzten Jahre immer belastbarere und differenziertere Zahlen hervorgebracht (z. B. O'Mahony 2018; Landward Research: Profiling the Profession 2021). Daraus geht u. a. hervor, dass zwar die Universitäten zunehmend ihrem Inklusionsauftrag nachkommen (Philipps und Gilchrist 2012: 674, 685), aber der Anteil von Studierenden und Beschäftigten mit Behinderungen und chronischen Krankheiten in den Archäologien dennoch gering ist. Auch der Zugang zu den idealtypischen Berufen außerhalb der Wissenschaft ist erschwert (De'Scathebury 2018). In archäologischen Tätigkeitsfeldern arbeiten, wie Umfragen in Großbritannien und den USA zeigen, ca. zwei bis fünf Prozent Personen, die sich selbst als *disabled* bezeichnen. Dies sind weniger als im Durchschnitt der Tätigkeitsfelder und im Bevölkerungsdurchschnitt (Philipps und Gilchrist 2012: 680). Zudem sind unter den archäologisch arbeitenden Personen viele Menschen, deren chronische Krankheiten und Beeinträchtigungen erst in fortgeschrittenem Alter entstanden sind, z. B. Diabetes, Arthritis, Rheuma sowie Herz- und Kreislaufkrankheiten und psychische Probleme. Ein Teil der Befragten gibt an, dass die Beeinträchtigungen durch die archäologische Arbeit eintraten oder durch sie verschlimmert wurden. Der Anteil von archäologisch Tätigen mit sogenannten Sinnesbehinderungen, neurologischen Diagnosen oder Beeinträchtigungen des Stütz- und Bewegungsapparates ist geringer. Auffällig ist der im Vergleich zum Durchschnitt der Tätigkeitsfelder etwas erhöhte Anteil von Menschen mit emotionalen und kognitiven Beeinträchtigungen (Aitchison und Edwards 2003: 52; O'Mahony 2018; Landward Research: Profiling the Profession 2021).

Den akademischen Alltag inklusiver zu gestalten, kann zum Beispiel bedeuten, sich mit der Frage auseinanderzusetzen, wie man Studierenden einen Nachteilsausgleich gewähren kann, oder was man tun kann, um in einer Publikation eine Abbildung so in Text zu übersetzen, dass sie barrierefrei zugänglich wird. Steht eine Tagung an, wäre nicht nur zu erheben, wer eine Kinderbetreuung vor Ort braucht, sondern auch, wer bestimmte Hilfsmittel oder barrierefreie Lösungen benötigt, und den Teilnehmenden eine Handreichung für barrierefreie Vorträge zuzuschicken (Ladner 2015; American Anthropological Association 2021; Ohio State University 2021).

Zur langen Liste der Herausforderungen, die der Inklusionsgedanke an uns alle stellt, gehören auch unsere Sprache und die Art, wie wir kommunizieren. Unter dem Gesichtspunkt der Barrierefreiheit wurden Konzepte und Handreichungen für Einfache, Leichte bzw. Klare Sprache entwickelt (Netzwerk Leichte Sprache e.V. 2021). Viele Einrichtungen des Kulturbereichs kooperieren mit Agenturen, die Texte und Websites entsprechend prüfen (Agentur für Leichte Sprache 2021). An den Universitäten und Forschungseinrichtungen dienen Fachdienststellen für *Diversity Management* oder Inklusion als Ansprechpartnerinnen. Um eine nicht-diskriminierende Sprache zu verwenden und Ableismus zu vermeiden, können viele gewohnte abwertende Begriffe und Redeweisen ohne Verlust ersetzt werden (Pulrang 2020; Morris 2021). Worte wie „Krüppel", „Idioten" oder „Irre" gehören ohnehin weitgehend der Vergangenheit an (Schmuhl 2010). Es ist unkompliziert, von ‚Menschen mit Seh- oder Hörbehinderungen' zu sprechen statt von ‚den Blinden' und ‚den Tauben'. ‚Geistige Behinderung' lässt sich durch ‚kognitive Beeinträchtigung' ersetzen.[11] Wissenschaftliche Publikationen oder Ausstellungstexte sollten aber auch auf andere potentiell abwertende Begriffe und Metaphern verzichten, wie etwa ‚auf taube Ohren stoßen' oder ‚hinterherhinken' (Maskos 2015: 308–309). Gerade von der Wissenschaftssprache dürfen Sachlichkeit und Sensibilität verlangt werden. Inklusion bedeutet nicht, dass definitive Listen mit erlaubter und verbotener Sprache aufgestellt werden. Es geht vielmehr darum, mehr Aufmerksamkeit für eine sensible Sprache zu entwickeln. Eine Reihe Handreichungen hilft dabei (z. B. Gleichstellungsbeauftragter der Universität Leipzig 2020; Beauftragte der Bundesregierung für die Belange behinderter Menschen 2020; Leidmedien 2019). Sprache ist wirkmächtig, und eine nichtdiskriminierende Sprache kann ein Baustein auf dem Weg zu mehr Inklusion sein.

Fazit

Inklusion in den Archäologien als Herausforderung? Inzwischen gibt es für viele Anliegen und offene Fragen abrufbares Wissen. Es geht bei Inklusion nicht zwingend darum, die perfekte Lösung zu präsentieren, die dann für alle und für immer richtig ist. Eine derart dauerhafte Lösung kann es weder in der wissenschaftlichen Praxis noch in der Lehre, im Bereich der Kulturvermittlung oder in der Kommunikation geben, denn der Inklusionsauftrag ändert sich laufend. Unzulänglichkeiten in der Umsetzung sind kaum zu vermeiden. Doch es geht vor allem darum, zu demonstrieren, dass wir bemüht sind, inklusiv zu denken und zu handeln – gleichgültig, ob wir selbst mit oder ohne eine Behinderung oder chronische Krankheit leben.

[11] ‚Menschen mit Lernschwierigkeiten' ist derzeit die bevorzugte Selbstbezeichnung von Menschen, die Probleme mit dem Lernen haben; vgl. Mensch zuerst 2021.

Dazu gehört auch, die Geschichte von Menschen mit Beeinträchtigungen in der archäologischen Forschung zu berücksichtigen. Sich mit Geschichte auseinanderzusetzen, kann Orientierungswissen bieten, das vielleicht zum Abbau von Barrieren und exkludierenden Denkweisen beiträgt. Als historische Kulturwissenschaften sollten auch die archäologischen Fächer ihre Sichtweisen und Ergebnisse einbringen können. Quellenmangel und methodische Schwierigkeiten sind nicht von der Hand zu weisen, aber die Altertumswissenschaften haben Erkenntnispotenziale, was die Geschichte von Behinderung angeht. Dabei können sie sich vom Theoriestand der Disability Studies inspirieren lassen. Es bietet sich an, Behinderung strikt als heuristische Kategorie zu benutzen, um den Blick offen zu halten für Situationen, Lebensweisen und Deutungen der Vergangenheit, die der moderne Kollektivbegriff ‚behindert' nicht treffend erfassen würde. Überfachliche Kooperationen zwischen den Archäologien und Biowissenschaften, insbesondere der Physischen Anthropologie, sind unerlässlich, da es sich beim Großteil der relevanten archäologischen Quellen um Funde menschlicher Überreste handelt. Damit diese Kooperation gelingt, ist ein reflektierter Umgang mit biologischen und soziokulturellen Konzepten nötig. Vorsicht ist geboten, wenn diese miteinander in Verbindung gebracht werden sollen (Martin 2017: v). So lassen sich ontologisierende oder essentialisierende Schlüsse vermeiden, die auf der Seite der Disability Studies häufig befürchtet werden, wenn sich Archäologien und Anthropologie zu Beeinträchtigung oder Behinderung in der Vergangenheit äußern.

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Blind and Partially Sighted People's Motivation to Visit Museums: A London-based Case Study

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Blind and Partially Sighted People's Motivation to Visit Museums: A London-based Case Study

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Abstract

In the UK, accessibility for blind and partially sighted people in museums and cultural heritage sites has seen substantial progress thanks to the civil rights movement and the Equality Act of 2010. In recent years, there has been significant development of projects in UK museums for disabled people that aim to be socially inclusive. The concept of "motivation", coming from Museum Studies literature, is central to understanding blind and partially sighted visitors' experiences. This paper aims to investigate the motivation and expectations of blind and partially sighted visitors, providing a general understanding of why they decide to visit museums and how accessible resources affect their experience. Findings show that participants have multiple motivations for visiting, and they do not consider different motivations to be conflicting. The social and educational aspects seemed to be the most valued elements regarding visitors' experience. The analysis suggests clear links between the way participants use resources in the museum and their motivation for visiting museums. The results show that the use of accessible resources has the potential to enhance the museum experience of blind and partially sighted people.

Keywords

accessibility, motivation, museums, learning, disability

Zusammenfassung

In Großbritannien hat sich die Zugänglichkeit für blinde und sehbehinderte Menschen in Museen und Kulturerbestätten dank der Bürgerrechtsbewegung zusammen mit dem Equality Act von 2010 erheblich verbessert. In den letzten Jahren wurden in mehreren britischen Museen Projekte für behinderte Menschen entwickelt, deren Ziel es ist sozial inklusiv zu sein. Das Konzept der „Motivation", das aus dem Feld der Museumsstudien stammt, ist zentral, um die Erfahrung von blinden und sehbehinderten Menschen zu verstehen. Ziel dieser Arbeit ist es, die Motivation und die Erwartungen von blinden und sehbehinderten Besucher*innen zu untersuchen, um ein allgemeines Verständnis dafür zu schaffen, warum sie sich für einen Museumsbesuch entscheiden und wie barrierefreie Ressourcen ihre Erfahrungen beeinflussen. Die Ergebnisse zeigen, dass die Teilnehmer*innen mehrere Motivationen für den Besuch haben und dass sie die verschiedenen Motivationen nicht als widersprüchlich betrachten. Die sozialen und pädagogischen Aspekte des Besuchs scheinen die Elemente zu sein, die die Teilnehmer*innen in Bezug auf ihre Erfahrung am meisten schätzten. Die Analyse legt nahe, dass es klare Zusammenhänge zwischen der Art und Weise, wie die Teilnehmer*innen die Ressourcen im Museum nutzen, und ihrer Motivation für den Museumsbesuch gibt, und dass die Nutzung von barrierefreien Ressourcen das Potenzial hat, das Museumserlebnis von blinden und sehbehinderten Menschen zu verbessern.

Schlagwörter

Barrierefreiheit, Motivation, Museen, Lernen, Behinderung

Introduction

In the past 30 years, physical access to archaeological and cultural heritage museum collections has been discussed in the Western context regarding accessibility for disabled people (Candlin 2010; Bieber and Rae 2013; Ginley 2013; Hayhoe 2017; Sandell 2017; Kleege 2018; Weisen 2020). In the United Kingdom, accessibility for blind and partially sighted people in museums has developed considerably thanks to the civil rights movement and the Equality Act of 2010 (Wadham et al. 2012). The advocacy for equal opportunities, accessibility, empowerment, and inclusion was translated into social support, overcoming physical and mental barriers, discrimination, and prejudice (Barnes and Mercer 2010: 34). Additionally, following the publication of the 2015 'Code of Ethics for Museums' (Museum Association 2015) and the 2019 'Museum Accreditation Standard' (Arts Council England 2019), museums in the UK have started to develop projects for disabled people that aim to be socially inclusive.

The term "accessibility" has been traditionally associated with the more structural sphere of the issue (Appleton 2001; Weisen 2020; Silverman 2010). It is usually concerned with removing the elements that physically obstruct access to buildings for visitors with special needs (Dodd and Sandell 2001). However, over the past three decades, there has been a significant shift in values associated with accessibility, following the social model of disability (Pye 2007; Ginley 2013; Hayhoe 2017; 2019; Chatterjee 2020; Cecilia 2021a). Accessibility does not only concern the removal of physical barriers; it also discusses obstacles of a different nature impeding access to contents, materials and information, and access to tangible and intangible values embodied in artefacts. These barriers create disabling museum experiences which undermine blind and partially sighted visitors' confidence and empowerment.

The most apparent access barrier that blind and partially sighted people face is that objects are usually perfectly visible but placed in a physically separate context from the visitor, usually behind glass cases or similar structures. Furthermore, barriers also limit access to areas and create navigation and wayfinding problems. Approaching an unknown space can be distressing and intimidating, especially for people with visual impairments (Bieber and Rae 2013). Museums are called to break down the barriers that prevent blind and partially sighted people from getting a clear idea of a museum's interior, understanding the galleries' structure, and how objects are organised (Davis 2001).

Barriers to information constitute another layer of difficulties that blind and partially sighted people encounter in the museum space. Museum visitors often report difficulties in accessing the language used in written interpretation such as labels and panels. The language of labels can often be perceived as a barrier due to jargon or outdated vocabulary. Blind and partially sighted people experience further difficulties concerning labels and panels. Written information is usually inaccessible for blind visitors unless it is translated into a Braille format (assuming that the blind visitor can read Braille), visitors are accompanied by companions or a guide who can read labels and panels to them (Garip and Bülbül 2014), or they have access to technology that can scan and magnify or read the labels to them.

The international debate on the use and potential of accessible resources and assistive technology to overcome existing cultural heritage barriers is very active and controversial. Scholars, museum professionals, and technology developers often discuss technology developments (Sensing Culture 2018; Cecilia 2019; Museum Association 2019; Museum Computer Group 2019). Improvements in understanding the potential of accessible resources are essential if museums are to develop full access to archaeological collections and artworks and create truly inclusive environments. An audience-centred approach looking at the museum experience of blind and partially sighted people, their motivation to visit museums and what they expect to do in the museum space is crucial to develop accessible and inclusive exhibits and resources.

This study contributes to the large-scale debate on disabilities and access in museums and archaeological collections. It presents findings from the visits of five blind and partially sighted people to the Victoria & Albert Museum (London) between December 2017 and February 2018. The analysis begins by presenting the self-reported expectations of participants before the visit. It then discusses participants' motivations throughout their interviews, drawing from the motivation framework identified by Moussouri and her colleagues (Moussouri 1998; Moussouri and Roussos 2013; Hohenstein and Moussouri 2018). The paper provides baseline research to develop long-term solutions that would encourage blind and partially sighted people to visit museums, and to make their experience equal to that of sighted visitors in terms of opportunities.

Methodology

This paper presents initial findings on the motivation of blind and partially sighted visitors to visit museums. Furthermore, it analyses how the presence and the use of accessible resources affect their motivation. The study is part of a broader analysis of the museum experience of blind and partially sighted visitors, which was carried out as part of my PhD research project at the UCL Institute of Archaeology (Cecilia 2021a).

The nature of this research is qualitative, which allows for a holistic analysis of the social context based on deep, varied, and detailed data (Mason 2002; Silverman 2006). The methodology used is Interpretative Phenomenological Analysis (IPA). This orientation describes a specific phenomenon or experience from specific participants' perspectives (Cresswell 1998). It facilitates addressing the meanings and perspectives of blind and partially sighted participants, as I look at the museum experience from the perspective of those who act, while they act, by using descriptions and quoting them directly (Firestone 1987; Schwandt 2000). Participants were recruited using a snowball approach, and they were free to visit the museum when, how, and with whom they wanted.

Analysis

The point of departure for this analysis is that motivation is at the core of the museum experience. Participants mentioned several factors that prompt them to visit museums. These motivations are related to perceived values of museums and their roles in the participants' lives, which further informs visitors' use of museums as a resource (Falk et al. 1998). "Motivation" here is understood as the intersection between personal and contextual factors that arise when visitors act in a sociocultural context (the museum) and encounter artefacts. In order to analyse visitors' motivations, I adopted the coding framework suggested by Moussouri and her colleagues (Moussouri 1998; Moussouri and Roussos 2013; Hohenstein and Moussouri 2018), based on Macdonald's concept of cultural itineraries (Macdonald 1992). Information on motivation was collected as part of the semi-structured interviews both by directly asking participants to express their reasons and expectations for coming to the museum and by indirectly asking questions about the perceived benefits and the role museums play in their lives, which were not related explicitly to the purpose of their visit to the Victoria & Albert Museum. In the following sections, I present visitors' expectations and their motivation classified as cultural itineraries. I explore initial relations and connections between visitors' expectations, motivations, and the context of their visit.

Expectations

The presentation of findings begins with the analysis of visitors' expectations before their visit, namely what they wanted and expected to do or see in the museum and how they felt while preparing for their visit. Expectations are understood here as an element of the visit that influences visitors' motivation. They contribute to an understanding of the context and the identity that visitors bring with them when they enter museums. They shed light on visitors' personal and social context and the background against which they compare and experience the visit. While expectations have a direct effect on participants' motivations, they vary from motivations in several ways. Motivation is conceptualised here as the reasons and influential factors why blind and partially sighted participants decided to go to museums. On the other hand, expectations are beliefs that something will happen or is likely to happen, in this case, what blind and partially sighted participants believed they would do in the Victoria & Albert Museum, and the emotions derived from these beliefs. Therefore, it is crucial to look at expectations first in order to understand how motivations unfolded during participants' visits. Table 1 presents the expectations identified in the participants' responses.

Educational	• To be able to touch artefacts. • To have accessible information in large print. • To be able to obtain audio descriptions or guided tours without relying on heavily visual language. • To learn about history and archaeology. • To see "sensational" archaeological artefacts. • To learn about non-Western cultures.
Personal expectations	• To not feel bored. • To be able to easily navigate the space and access resources. • To feel welcome and avoid uncomfortable situations.
Social outcomes	• To not be constantly dependent on the help of companions. • To be able to share their experience. • To enjoy time with their companion.

Table 1. Expectations of participants.

Participants based their expectations of what they were going to find or to do in the space, primarily on their needs related to their impairments. All participants mentioned the desire to feel physically comfortable. Three of them expressed the general hope that they would feel included, while the other two spoke about specific expectations in terms of independence and accessibility. Two hoped to touch objects and get audio descriptions, as they considered the combination of touch and audio the only way they could access the museum's contents. One expected to move independently in the space and feel welcome due to her guide dog. This participant did not mention expectations about the content of the museum:

> "[I hoped that] she [her guide dog] was going to be accepted. Sometimes in other places, they have been difficult about it. You know, restaurants, shops… I also need to feed her. I hoped I could in a fairly easy way." [Female, 22 years old]

Two participants are frequent museum visitors, and they revealed expectations closely related to previous visits to the same and other institutions. Their expectations were content-related and subject-specific:

> "I thought this gallery was going to have some of the nicest objects in the museum. I was hoping it would be easy to find the objects related to the audio and the large print guides. I wanted to get as much information as I could." [Male, 32 years old]

> "I think I want to learn more about Islamic archaeology. Some of the objects here are quite impressive, and I always find the archaeological accounts interesting." [Female, 34 years old]

Another participant hoped to share her experience with her sighted friend and for them to learn about the objects together. She mentioned that she was particularly interested in ceramic artefacts and ancient manufacturing techniques. She pointed out that touching objects allowed them to be explored by her as a partially-sighted visitor and by her companion at the same time. This prevented her from feeling excluded or marginalised. She referred to previous experiences (for instance, a touch tour at another museum) where she felt that her friend acted more as a carer than as a companion due to the fact that contrary to herself her friend was not permitted to touch artefacts.

Expectations seemed to play a crucial role in the participants' decision to "do the visit." They influenced their motivations and how they navigated the space, used different resources, and encountered objects. While these findings suggest that expectations seemed to be connected with the participants' personal and physical needs, the following sections show how motivations are deeply rooted in the perceived values that participants associate with museums as institutions.

Motivation

Following Moussouri's framework, the categories of motivation (or cultural itineraries) identified were social event, education/participation, entertainment, place, therapeutic, and political/participation (Hohenstein and Moussouri 2018: 253; see also Moussouri 1998, 2003).

Social event

All participants highlighted the value of the social aspect of the museum experience in their interview responses. "Social event" itinerary is the category Moussouri and her colleagues defined as "a special social experience to be shared with family or friends" (Moussouri and Roussos 2013: 25; see also Hohenstein and Moussouri 2018: 253). Participants considered the museum experience a special social experience. It was seen as one of the options visitors have with their family, partner, friends, or social groups when they want to spend time doing something meaningful or pleasurable together.

"Social event" was the predominant motivation for two participants. They kept referring to it throughout the entire interview. One person stated clearly that all she hoped for was to spend a pleasant evening with her boyfriend, relax after work, and do something different from their usual routine. While they did wander around the galleries and looked at a few objects, they also spent time in the café, had a drink at the museum's bar, and listened to some music. Similarly, another participant mentioned how important these visits are for her, as they are the only times she manages to spend with her former university best friend. She was nostalgic and happy to perform similarly in the same social context with her friend as she had done before her sight loss. Being able to spend time together seemed to be highly significant for her.

Another participant explained that he had already visited the Victoria & Albert Museum as part of an organised visit:

> "It was a couple of months ago, actually. It was an organised tour – a trip actually for special needs and visually impaired. I didn't get, to be honest, a proper guide. But they took us on a tour with other people, helping each other." [Male, 35 years old]

He valued the opportunity that the museum offered to get together and explore the collection. During this particular visit, he toured the museum with a professional guide. In the interview, he compared his experience with a knowledgeable guide to the one that he usually has with his family:

> "When I go with family, it's not like that. Because everyone is busy to look at their own things. It wouldn't have been as with professional people. They might help me, but it wouldn't be like today's experience. I would still enjoy it, I like spending time with my family, and it's good to be in a museum with them. But it would not be the same thing." [Male, 35 years old]

The social element also emerged when two participants explained the value of visiting museums as part of guided tours specifically designed for blind and partially sighted people organised by VocalEyes (a UK-based company that provides audio description services in museums) and other social groups. In particular, one said:

> "It's been a big social part of my life. More than I expected. Especially like these VocalEyes tours and things. It's a great way of meeting new people. Because everyone comes here for a common reason, because they enjoy visiting museums and learning about art, history, and archaeology. You're going to an exhibition because you want to look at something. You have a common interest in things with people. So, you actually get chatty about it with them." [Male, 32 years old]

Another participant explained how assistive resources could be detrimental in that they can have a negative effect on the desired social experience. He compared two visits to the British Museum (London), one with family members, and the other one with a friend. In the first case, he was disappointed about the experience. He felt "dragged" by family members who only looked at artefacts rather than spending time with him. He said that while he had an audio guide for himself, his relatives did not have one and only looked around. The audio guide (specifically designed for blind and partially sighted people) made him feel isolated and detached from his family. He focused on those negative feelings rather than enjoying the encounter with the collection.

On the other hand, when he visited the same museum with a friend, his experience was different, as they actively explored the museum together and his friend described objects to him. While the type of assistive resource he used in the first visit is specifically designed to widen access to the collection, it has a negative impact on the social aspects of the museum experience. The tool's design and the audio guide's content can create a barrier to a meaningful social experience. Bulky headsets or headphones can isolate the visitor and make it hard to interact with companions. Moreover, having audio guides with descriptive audio content specifically designed for visually impaired people can be disruptive if the other members of the same group do not share the same audio guide. This is the case when sighted companions are offered mainstream audio guides, which differ in length and content.

Findings above show that museums are seen as places to meet new people, share meaningful experiences, and explore common interests. The museum visits are also occasions that can reinforce existing relationships and help the visitor feel part of family activities. Museums have a direct effect on building relationships, creating bonds, and associating with different people. Findings suggest that visitors' and groups' agendas are constructed, negotiated, and refined before, during, and after the visit.

Education/participation

The education itinerary is defined as "learning something in particular, more often just learning in general" (Hohenstein and Moussouri 2018: 253; see also Moussouri and Roussos 2013: 25). For the purpose of this research, I have refined the category by dividing it in two: a general interest in learning and exploring something new and a specific interest in the content and subject matter presented in the exhibition.

All participants expressed the desire to find out more and were interested in learning about archaeology, history, and the museum content. They were interested in acquiring information about a specific period or object, or they were simply interested in learning something new. Participants were either interested in the topic of their visit because they had previously studied it, read about it, or experienced it in different contexts (such as travels, books, or movies), or because they were willing to explore something that was new for them. Learning was clearly stated as the primary motivation for visiting the museum by two participants. However, while one expressed her interest in the Victoria & Albert Museum's specific ceramic collection, the other participant emphasised that he simply enjoyed the overall learning experience. Finding out about new things is, in general, the reason he would visit any museum.

The first participant spoke of how these visits encourage her to continue learning about archaeology and, specifically, ceramic archaeology. She emphasised how enjoyable it was to prolong the experience and read about what she had seen. The second one expressed similar feelings. He seemed enthusiastic about the idea of revisiting the museum. He explained how he values the memories he created in the space:

> "You can't always take it all in, and remember. It would be nice to come back and refresh the memory as well. […] I will go back and look at everything else. It's just a matter of time. You do get absorbed. Everything is so unique and interesting. I'd be sorry to miss anything, to forget anything." [Male, 32 years old]

These findings refer to the sociocultural concept that learning is gradual and does not occur only across one visit. The intention to return to the same museum space and the desire to prolong the visit are the effects of the intense encounters that both participants had in the environment with the artefacts. These encounters generated a sense of "troubling incompleteness" (Carr 2001). The intersection between the education itinerary, the emergent motivation during the visit, and the environment provoked a feeling of incompleteness, a longing to prolong the experience. This suggests that meaning-making happened while the visitors were performing in the environment that led to open-ended experiences.

The second participant decided in advance which area of the museum he wanted to explore. He spent 2 hours and 12 minutes exploring one gallery. He observed and read the large-print labels for every artefact in the gallery, and he listened to all the audio descriptions available. Additionally, after this particular visit, he returned to the museum on two other occasions to explore the rest of the galleries. He expressed how much he valued putting into context the things he looks at instead of simply appreciating the aesthetic of objects:

> "It's ok to say 'oh that looks nice', but putting it in context, understanding what you're seeing and the story behind it makes it so much more interesting." [Male, 32 years old]

He praised how technology usually facilitates his experiences, as it allows him to quickly and effectively access content:

> "I think technology is very helpful. You see? Having the audio guide on my phone made it easier. I didn't have to carry around heavy and large things. It was all there, very quick, nice and easy." [Male, 32 years old]

Additionally, he often spoke of the connections he made between what he was seeing and his lifestyle:

> "Yeah I did – it's interesting to see how people used to live and to see the things that they used to have in their homes. And to compare it with what we have today. Things today are a lot simpler, I think. A lot more functional rather than fancy in appearance. I mean you can still get artistic decorative things, but obviously a lot of people can't afford those things these days, so you just have much simpler, cheaper things." [Male, 32 years old]

He also made specific connections between artefacts from the display that reminded him of objects from his background:

> "There was a table in there that actually is a little bit similar to a table that we've got at home. You can pull each end to extend the table. It made me think and compare it to something at home. That was quite nice." [Male, 32 years old]

Meaning-making took place by connecting his prior knowledge with what he experienced in the situated context. It is essential to highlight the situated nature of meaning-making: it occurred between the pre-visit agenda and the situated emergent motivation triggered by the environment. While immersed in the experience, the participant reflected on previously-held knowledge. He performed in a specific space and was reminded of how he used similar objects in another context. In the example of the table, he interacted directly with the object. He engaged with the information provided by the museum. At the same time, he made references to both visual and non-visual aspects of the objects. The parallel he made was grounded in the artefact's kinaesthetic qualities: how it functioned and how he used it. The meaning he found in the object did not rely on the explicit visual values enforced by the museum's display but instead on the bodily interaction he had with a similar artefact in his life. He initially drew meaning from the information retrieved through the digital tools but then reflected on how his experience was related to the object's materiality. In this case, technology was not detrimental to the objects' encounter: instead, digital tools helped the participant access the information effectively, but they did not distract him from the object itself and its materiality.

Another major element of the education motivation that emerged from the experiences of other participants was the possibility of learning as a result of touching artefacts. Two of the participants requested a guided touch tour of the artefacts. They both mentioned that they wanted to hear more about the museum and have a general tour of the collections. They were both given touch tours of highlight objects by two trained guides from the museum. One enthusiastically interacted with his guide. He asked her questions about the museum's history, each objects' history, the materials, and the shapes. He thoroughly touched each object, kneeled, bent, and stretched to acquire as much information as possible. He explained in the interview that touch and sound are his primary means of access to most information:

> "I can feel the object on my own, but I would like to know (be told) what this means, what's the significance, the history. Like different things that mean something else that someone would have to describe. But I could feel the object on my own. I like to hear where the object was found, by whom. What is the history?" [Male, 26 years old]

He clarified that the combination of touch and description was essential in creating a valuable experience for him. He compared it with previous experiences that had either audio or touch only, describing them as "pointless" and "frustrating." In this case, learning can be understood not just as cognitive and factual but also as embodied. The way he performed in the space, interacting with his guide, touching objects, and moving around, was an act of exploration and an affirmation of self-presence. His body was performing a social activity by exploring the physical environment. He negotiated his identity as a visitor in relation to the objects, the environment, and his guide. He made meaning through the unwavering connection between his body and the world, bringing about an "intense feeling of self-presence" (Rees Leahy 2012: 79).

Another participant mentioned that museums often do not have tactile resources, making him feel marginalised and unwelcome. He pointed out that he understood that most archaeological objects are fragile and valuable and cannot be touched for conservation reasons. However, he also added that the lack of tactile objects negatively affects his decision to visit a museum, as he feels that there is "nothing for him to learn there." He suggested the use of technology to create accessible tactile resources such as 3D prints:

> "If they had at least 3D printed some of the objects it would have been a lot easier. Touching anything adds a lot more to it. 'Cause describing doesn't really go that far. You really need a combination of both things. Just touching without the audio wouldn't be any good either. The best thing is to have just about the combination of talking as well as touching. Because you wouldn't appreciate it otherwise. You need the context." [Male, 26 years old]

However, another participant seemed less enthusiastic at the possibility of touching replicas:

> "Sure, I guess [touching replicas] it's ok. It's better than nothing, I guess. The reality is that I really like touching the real thing. I don't know… it makes me create a connection. It feels special because it's ancient and maybe it was made a thousand years ago, and you can actually feel that it was used a thousand years ago. It's special!" [Female, 34 years old]

The debate around the tangible and intangible values of replicas vs. "authentic" objects has gained prominence in museum studies and public archaeology in the past 20 years (Pye 2007; Hampp and Schwan 2014; Schwan and Dutz 2020). While this paper does not explicitly focus on the debate, it is essential to highlight that the two participants mentioned above, with similar visual impairments (they are both congenitally blind), similar ages, and similar backgrounds, presented two diametrically opposing reactions to the possibility of touching replicas of archaeological objects. While one was enthusiastic about the idea of being able to explore material properties such as shapes, dimensions, and sizes, the other focused on the intangible values embedded in the artefact. While the discourse around replicas and "authentic" objects is complex, these findings show that both tangible and intangible values represented in the form of replicas and original objects create a meaningful experience and facilitate learning.

Entertainment

The entertainment itinerary is defined as "seeking fun, an enjoyable thing to do" (Hohenstein and Moussouri 2018: 253; see also Moussouri and Roussos 2013: 25). While most participants expressed the desire to spend an enjoyable time in the space, entertainment was the main cultural itinerary identified by one of the participants in this study. This itinerary is directly related to, and it happened in conjunction with, the social one. She came to the museum seeking fun and pleasurable things to do. She arrived at the museum with her partner and her guide dog, and they went straight into the museum café, where they got beverages and fed the dog. They did not pick up a map but instead casually explored the ground floor of the museum. Her partner made her touch several architectural features (doors, walls, a marble balustrade). She later explained that he is an architect and was very impressed with the architecture of the place. They also came across two tactile archaeological artefacts (two Chinese vases), touching them together. They spent the majority of the time chatting and laughing together.

Her understanding of the museum as an institution before visiting it was connected to the institutionalised image she carried from her childhood visits. She imagined museums as authoritative learning places ingrained in visual culture to which she did not belong because of her lack of interest in the subject matter (archaeology and design, in this case) and the absence of accessibility. The entertainment itinerary played a crucial role in choosing which museum to visit, as she was attracted by the activities offered during the late opening of the museum in the evening:

> "I really just wanted a nice date with [her partner], it's nice to be romantic sometimes and this seemed a good place. I like the fact that you can come here at night. We got a drink as well. That was cool. I didn't realise you could chill and drink in a museum." [Female, 22 years old]

Objects and, in general, the museum collection seemed to play a marginal role in her visit. She used them to engage with her partner and fulfil her desire to do something different and pleasurable.

Therapeutic

The therapeutic itinerary refers to "reasons related to one's physiological condition" (Hohenstein and Moussouri 2018: 253; see also Moussouri and Roussos 2013: 25). This cultural itinerary was identified only in the experience of one participant. Unlike the others, she seemed to be extremely conscious of and concerned about her condition of sight loss throughout her visit and during the interview. Her impairment affected her motivations, her visit strategy, how she used the space, how she interacted with objects, and the meaning she made of her experience. The museum seemed to be the element that allowed her to embrace her experience of sight loss, turning it into a positive one. Her body in that space was no longer defined by her impairment but rather by the opportunities to perform positively.

She pointed out that her visits to archaeology museums made her feel a connection with the life she led before she started losing her sight. The encounters with objects made her actively re-discover and embrace part of her past identity as an art history and archaeology learner:

> "I wanted to study archaeology and art at university […] I lived […] near a museum, and we used to go there during on Fridays when I was a child, with other children. […] When I lost my sight, I had to accept that I couldn't do it anymore [studying at university]. […] It was quite sad. […] I did English literature at Uni in the end. I quite enjoyed it, so it's not too bad. But it's nice to be able to come back to these places [museums]. I always loved it when I was younger." [Female, 34 years old]

From her words, it is clear how the act of being in the space was part of her meaning-making experience:

> "When you feel down, museums are good locations where to go and feel that not everything is terrible and you can still spend some time to learn about new things, and look at art, history and archaeology […] and be surrounded by beautiful, precious, and ancient objects. Everyone deserves a break; I think it's important for everyone to have some time to themselves every now and again. I personally love going to galleries. It helps to relieve all those negative thoughts and forget about the world around me for a while." [Female, 34 years old]

In this case, her identity can be seen through sociocultural lenses: it was constructed as she acted in this specific context of her social life. The entering-identity was dynamically and constantly reshaped by her physical and social interaction in the environment. Through the visit and the encounter with objects, she re-discovered her passion and interest and established a connection with her life before losing sight.

Political/participation

The political itinerary refers to the desire of visitors to act in a way to fight discrimination or exclusion by actively participating (Moussouri and Roussos 2013: 25; Hohenstein and Moussouri 2018: 253). There is an outspoken purpose on the visitor's part to raise awareness to bring about change (Moussouri and Roussos 2013: 25). It is closely related to the identity of the visitors and their background. The political motivation was evident in all the interviews, as participants kept referring to the value of raising awareness about the needs of blind and partially sighted people.

The following quotes show that self-advocacy was the most common motivation for participants to be interested in taking part in this research. Improving accessibility and contributing to the creation of independent experiences for blind and partially sighted people were the common reasons articulated by the participants:

> "I like visiting museums anyway. So, if I can help someone else do research to disability and things is always great, and making museums easier to navigate and to understand what you're looking at is always great." [Male, 32 years old]

> "I am always very interested in anything to do with [accessibility and] visual impairment. Any kind. […] I really appreciate the brilliant work that you are doing and it's really interesting that you have a genuinely passionate for accessibility. People don't really understand what sight impairment or even disability means." [Male, 26 years old]

> "And of course, if I can be helpful for someone in their study, why not? I can take part. Now I know more about the study so I'm glad because it's going to improve accessibility and lots of other things. You know, giving feedback and being involved is good." [Male, 35 years old]

In general, the participants were in favour of using their experience to enhance the wellbeing of other blind and partially sighted people. They appreciated the possibility of helping to enhance inclusion and access for others through their input. They often mentioned other collaborations with institutions such as the Royal National Institute of the Blind (a UK charity that supports people with sight loss) or Metro Blind Sport (a UK based charity that opens doors to sport for all visually impaired people, regardless of age or sporting ability) to improve accessibility and inclusion.

In addition, empowerment was another common theme throughout the interviews. The participants mentioned specific elements that triggered empowerment in their experiences, which were often linked with their identity and motivations. All the participants are active advocates for the rights of blind and partially sighted people in their daily lives. They blog and tweet about their disability, volunteer for charity organisations, raise funds, play sports, and participate in focus groups to improve accessibility.

Learning was the key element that enabled empowerment in one participant's experience:

> "It just great to be able to go out and about and learn something new, see new things. It just adds a lot more of a variety to my life I think. There is a good reason to go out and look at things, learn things, enjoy things. It's great." [Male, 32 years old]

Another mentioned that the main reason why she agreed to take part in the research was:

> "… not because I was interested in the museum itself, but I wanted to prove my boyfriend wrong when he said that I could not do it – not in a bad way, but in the sense that I get frustrated quickly and usually leave if that's the case." [Female, 22 years old]

Proving her partner wrong and showing him that they could share a different but still meaningful experience was a strong motivation for her to participate in the research. She expressed how she constantly pushes herself as an athlete, is independent, and achieves excellent results. She had also gained more confidence thanks to her guide dog, as it made her feel more secure and independent. However, she still felt fearful when dealing with new environments, but she liked to prove to herself and others that she could face a challenge once she was presented with one.

Two of the participants explained about how the presence of accessibility tools such as tactile objects were a trigger for empowerment:

> "And thinking about accessibility and visual impairment, and how people can get the same enjoyment and fun as the other sighted people get. It's good. It makes you feel like you belong." [Male, 32 years old]

> "Museums definitely need to be more accessible. Like a million times more accessible. It was good to have touched objects. If you don't, you're saying 'this place is not for you'. Accessibility means that you give everyone equal opportunities. There's still so much work to do." [Male, 26 years old]

In their discourses about independence, the participants often associated empowering experiences with technology. Technology was viewed as a crucial trigger for independence. All participants used Apple iPhones with different accessibility features activated, and they used personal computers with in-built accessibility software and functions. They used this equipment for activities like work and personal communication, social networking, transport enquiries, information, taking and viewing pictures and videos. They often mentioned specific apps that facilitate their use. The following quotes show how crucial technology was in their lives:

> "[Technology] has allowed me to be more independent. It's a lot easier to go around and do lots of things I want to do. It opens up the world a lot more. I can take my phone now and plan a journey somewhere, or look something up on the internet. [I can] plan things in advance, so I know where I am going, what I will be doing, how easy it might be to find my way around. It's much easier to plan things and then it gives you more confidence about going there and doing things while I'm there. And if I need more help while I'm there, that can also help as well." [Male, 32 years old]

> "Technology has a crucial role in my life now. It allows me to be more independent." [Female, 22 years old]

> "What really gave me a bit of independence are the accessibility software. They really helped me. Other than that, it would have been a waste." [Male, 26 years old]

> "Technology is so advanced these days. Even just my phone. Accessibility has improved and there are many apps that keep coming up to make life a little easier for us [visually impaired people]. […] I'd say that we'd be lost without the tech that is available nowadays." [Female, 34 years old]

> "My phone is great! I can do everything with it. I can even call a taxi. I like to be able to do things on my own with it. I do not use it that much but it is nice to know that you are still able to do things. Computers really helped as well especially at university." [Male, 35 years old]

Without being prompted, some participants also mentioned technology in relation to the museum experience:

> "I apply it to every aspect of life, would be nice to see what it could do in museums there are so many possible applications. Even just a guide for direction. Or 3D prints?" [Male, 26 years old]

> "I personally make as much use of technology as I possibly can. Actually, I should have probably tried to use some of the apps I normally use here as well. I could have used an app that reads text aloud. Oh that would have been fun!" [Male, 32 years old]

> "The less you have to do the things yourself, the easier it is. If things can trigger automatically – it would be great if you could just walk up to an object, and as you get close to it, it just starts speaking in your ear. You don't think about these things on your own, but talking about it now – yeah it would be great!" [Female, 22 years old]

While only two participants used digital tools during their visits, it was clear that all interviewees valued technology as an essential part of their lives, and as a trigger for independence and empowerment. The participants' advocacy for a better and broader use of technology in the museum suggests that accessible and inclusive technology in the museum space can replicate empowering situations during the visitor experience.

A note on the effect of the COVID-19 pandemic

The COVID-19 pandemic had a serious impact on museums and the cultural sector in the UK and across the world. New public health regulations are changing the visitors' experience and access to archaeological objects and artworks (Crooke 2020; Rees Leahy 2020).

I conducted an initial study (Cecilia 2021b) on the effect of the pandemic and the new regulations on the visit of blind and partially sighted people in the UK. Initial findings from the study showed how there was a growing concern among blind and partially sighted visitors in regard to navigation, wayfinding, access to resources, access to information, and health and safety due to new social distancing restrictions and public health guidelines (Cecilia 2021b). These findings are also consistent with data emerging from a 2020 online survey conducted by the UK-based company VocalEyes (2020).

Overall findings are consistent with the discussion presented here on how challenging approaching the museum environment is for blind and partially sighted people, and the impact this has on visitors' motivations and expectations. The combination of findings from the two studies show how navigation and wayfinding are among the primary concerns of blind and partially sighted people when they plan to visit the space. The pandemic has increased concerns around navigation due to new social distancing restrictions. Furthermore, while findings from this paper showed visitors' genuine enthusiasm at the possibility of touching artefacts (both replicas and originals), the pandemic seems to have turned this enthusiasm into another cause of worry. Blind and partially sighted people voiced concerns that museums would struggle to provide tactile access even after the pandemic due to the restrictions. This possibility seems to discourage some people from visiting museums in the future, as they valued touch as an essential resource for object and social engagement. This negatively affects the education and social motivations explored here. On the other hand, new findings show that the pandemic positively impacted the social motivation for taking part in museum and cultural heritage activities. Increased digital engagement and the possibility to participate remotely from their homes during the lockdowns were positively highlighted, confirming the social value that museums have in participants' lives, as discussed in this paper.

Discussion and conclusion

This study looked at motivation as a complex sociocultural phenomenon that emerges while people act within a specific context. The findings suggest that the participants have multiple motivations for visiting, and they do not consider different motivations to be conflicting. Following the framework theorised by Moussouri (1998) based on Macdonald's (1992) concept of cultural itineraries, the primary motivations identified were social event, education/participation, entertainment, therapeutic, and political/participation. The idea of cultural itineraries comes from Lave's research on how motivation and values shape people's practice during their everyday lives (Lave 1988). Macdonald (1992) and then Hooper-Greenhill and Moussouri (Hooper-Greenhill and Moussouri 2001a, 2001b; Moussouri 2003, 2007) elaborated the concept further and applied it to the museum context.

The social and educational aspects of the visit seemed to be the elements that participants valued the most with regards to their experience. Overall, visitors appreciated the intellectual experience that museums offer. They brought into the museum personal interests related to content, and they focused on different elements of exhibitions based on these interests. These experiences exemplify how the sociocultural context provided the resources participants used to negotiate the values and the aims that motivated them to visit and use the space in the way they did. Participants came into the museum with pre-existing values and ideas, closely connected to their pre-visit entering motivations. Those set of values and ideas came from prior experience, knowledge, emotions. They shaped the way visitors acted in the situated context, and they were directly expressed in their expectations (Doering and Pekarik 1996). The findings show that expectations are defined not only by visitors as individuals but also by the content and physical context of the museum and the social context of the visit. Expectations were mainly related to physical and intellectual needs, and they affected the meaning participants made of their visits. Expectations mostly revolved around embodied aspects of the visit and bodily comfort. They were dynamically changing: participants seemed to define them according to how they act (or acted before in similar museums) in the space and what they heard about the museum from family members or friends.

Visitors' identities and backgrounds are linked to the value they associate with museums, their expectations, the different entering motivations, the way they use the space, and how they approach museum resources. In general, different motivations, strategies, and expectations show that learning is a strong component in all the experiences. Museums are mostly perceived as places to acquire knowledge and satisfy the desire to learn about a specific topic. The diversified backgrounds, history of vision, interests, and visitors' expectations are mirrored by the different learning experiences, strategies, and outcomes they display. Learning often appeared in conjunction with the social element, and it was an element that triggered empowerment and inclusion.

The initial discussion showed clear links between the way participants use technology and their motivations for visiting museums. While all the participants were avid technology-users in their professional and personal lives, only two decided to use personal digital tools and the museum's technological resources. The findings suggest that this was due to the fact that they perceive the museum visit as something that does not relate to technology, to their personal preference for visiting the museum as a social and educational experience, or to the possibility of technology being disruptive in the space. Even though they did not use digital tools or technological resources during their visit, all the participants highlighted how technology is an essential part of their lives. They stated that it is a trigger for independence and empowerment and suggested the potential use of cutting-edge technology to enhance the museum experience of blind and partially sighted people.

The discussion showed the potential of assistive resources with regard to making the museum experience enjoyable for blind and partially sighted people. In order to fully understand the impact of resources on the visitor experience, it is necessary to carry out a deeper analysis of the way blind and partially sighted visitors navigate the museum space, how they interact with other visitors, and how they encounter objects and digital tools. Understanding the holistic experience of visitors must be the critical starting point before developing resources for museum exhibitions. Museums must listening to the voices of traditionally excluded audiences to represent their lived experiences and to build accessible resources and inclusive environments.

The initial findings about visitors' motivation presented here show how essential it is to be aware of blind and partially sighted visitors' perspectives and to understand what brings them to the museum space in the first place, to design experiences that can create a truly accessible, inclusive, and empowering experience. Findings from this

study demonstrate that creating an accessible and inclusive visit experience for blind and partially sighted people is a long process. The plurality and diversity of their motivations cannot be addressed with a tokenistic approach of short-term quick fixes. Museums should ensure that communications provided to blind and partially sighted visitors are accurate, constantly updated and consistent with what is offered to them once they enter the space. This is crucial to help visitors refine their expectations and develop their motivations. Additionally, developing resources that directly respond to blind and partially sighted visitors' motivations and expectations (for instance, tactile resources, audio descriptive content, and navigation tools) is crucial to offer an empowering and inclusive experience. These recommendations clearly show that considering blind and partially sighted people's needs and input at all stages of exhibition developments should become part of how the whole museum operates.

The initial discussion on the impact of the COVID-19 pandemic on the expectations of blind and partially sighted visitors helps identify and address their needs and concerns in the post-pandemic museum. However, looking forward, it is necessary to perform a deeper analysis of how the pandemic affects the motivation and expectations of blind and partially sighted visitors to offer accessible, empowering, and inclusive museums experiences.

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Museum für alle – mehr als ein Schlagwort?

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Museum für alle – mehr als ein Schlagwort?

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Abstract

The motto of the International Museum Day 2020 was “The Museum for Everyone – Museums for Diversity and Inclusion.” But who is everyone? The focus of this article is a target group that is hardly included in archaeological and cultural history museums in Germany – people with psychological, neurological or cognitive disabilities. The article grows out of practice and should be understood as a workshop report. Using three practical examples from the Magdeburg Cultural History Museum, obstacles and success factors are highlighted. In addition, possible reasons for the marginalization of these target groups in German museums are to be identified. The article focuses on programs designed for groups. Also very important are of course offers for individual visitors. In addition it needs to be kept in mind that the group of people with disabilities is very diverse. Therefore, general recommendations may be derived from the experiences presented in this paper, but individual needs always must be taken into account.

Keywords

museum, inclusion, diversity, education, intellectual disability

Zusammenfassung

Der Internationale Museumstag 2020 stand unter dem Motto „Das Museum für alle – Museen für Vielfalt und Inklusion“. Doch wer ist alle? Im Mittelpunkt des Beitrags steht eine Zielgruppe, die nicht nur in archäologischen und kulturhistorischen Museen in Deutschland kaum einbezogen wird – Menschen mit psychischen, neurologischen oder kognitiven Beeinträchtigungen. Der Artikel ist aus der Praxis heraus entstanden und als Werkstattbericht zu verstehen. Anhand von drei Praxisbeispielen aus dem Kulturhistorischen Museum Magdeburg werden Stolpersteine und Gelingensfaktoren aufgezeigt. Darüber hinaus sollen mögliche Gründe für die Marginalisierung dieser Zielgruppen in deutschen Museen identifiziert werden. Im Fokus steht dabei die personale Vermittlung für Gruppen. Selbstverständlich ebenfalls sehr wichtig, aber nicht Gegenstand des Artikels, sind Angebote für Individualbesucher*innen. Darüber hinaus ist die Gruppe der Menschen mit Beeinträchtigungen sehr vielfältig, sodass zwar allgemeine Empfehlungen abgeleitet werden können, aber immer auch individuelle Bedürfnisse zu berücksichtigen sind.

Schlagwörter

Museum, Inklusion, geistige Behinderung, Diversität, Kulturelle Bildung

Zielgruppen

Obwohl Inklusion auch im Bereich Bildung und Vermittlung zu einem Schlagwort geworden ist (Internationaler Museumstag 2020), sind einige Erläuterungen zu Behinderung und Inklusion zum Verständnis der folgenden Ausführungen hilfreich.

Die UN-Behindertenrechtskonvention definiert Behinderung in Artikel 1 wie folgt: „Zu den Menschen mit Behinderungen zählen Menschen, die langfristige körperliche, seelische, geistige oder Sinnesbeeinträchtigungen haben, welche sie in Wechselwirkung mit verschiedenen Barrieren an der vollen, wirksamen und gleichberechtigten Teilhabe an der Gesellschaft hindern können“ (United Nations 2006: Art. 1). Die Behinderung entsteht also durch das Zusammenspiel von Beeinträchtigung und Barriere. Neben längerfristigen Einschränkungen sind in der Vermittlungspraxis von Museen auch vorübergehende Beeinträchtigungen und Belastungen in diesen Bereichen sowie Teilleistungsschwächen wie Legasthenie von Bedeutung.

Das inklusive Prinzip wird von der Aktion Mensch unter dem Leitspruch „Gemeinsam verschieden sein“ zusammengefasst (Aktion Mensch 2021). Inklusive Maßnahmen sollen verschiedenen Zielgruppen Teilhabe ermöglichen und die Menschen näher zusammenbringen.[1] Als gesellschaftliche Querschnittsaufgabe ist Inklusion auch für Schulen und Kitas relevant. Ein Hauptzielgruppe von Museen sind Schulklassen. Der Leitfaden des Deutschen Museumsbundes zu Barrierefreiheit und Inklusion aus dem Jahr 2013 formuliert daher folgende Prognose: „In Zukunft wird in der Mehrzahl der Kindergärten und Regelschulen inklusiv gearbeitet werden. Dort wird man selbstverständlich davon ausgehen, dass der Museumsbesuch für Kindergartengruppen oder Schulklassen, in denen junge Menschen mit und ohne Beeinträchtigungen gemeinsam betreut und unterrichtet werden, möglich ist und es entsprechende museumspädagogische Angebote gibt“ (Deutscher Museumsbund e. V. 2013: 15). Neben den Regelschulen sind Förderschulen mit verschiedenen Förderschwerpunkten zu berücksichtigen. An dieser Stelle soll nicht diskutiert werden inwiefern Förderschulen dem Inklusionsgedanken widersprechen, sondern die Situation in der derzeitigen Praxis dargestellt werden. In der Handreichung zur sonderpädagogischen Förderung in Sachsen-Anhalt ist der Förderbedarf wie folgt definiert: „Sonderpädagogischer Förderbedarf ist […] vor allem bei Kindern mit Beeinträchtigungen oder Behinderungen anzunehmen. Jedoch führt nicht jede Beeinträchtigung oder Behinderung zu einem sonderpädagogischem Förderbedarf. Darüber hinaus kann aus ungünstigen Lernausgangslagen und aus einem Bedingungssystem (pädagogisch, personell, räumlich, sächlich), das dem Zuwendungsbedarf eines Kindes nicht ausreichend entspricht, ein sonderpädagogischer Förderbedarf erwachsen“ (Kultusministerium Sachsen-Anhalt 2011: 11). Im vorliegenden Kontext sind insbesondere die Förderschwerpunkte Sprache, Lernen, geistige Entwicklung und emotional-soziale Entwicklung von Bedeutung; natürlich können auch körperliche Beeinträchtigungen hinzutreten. Aus diesen Ausführungen ergibt sich für Museen die Aufgabe sowohl die spezifischen Bedarfe verschiedener Zielgruppen zu kennen und zu berücksichtigen, als auch die Angebote so inklusiv wie möglich zu gestalten.

Ausgangssituation

Während die Bedürfnisse von Menschen mit körperlichen Beeinträchtigungen in den letzten Jahren stärker in Museen berücksichtigt werden, gilt das in wesentlich geringerem Maße für Menschen mit psychischen, neurologischen und kognitiven Beeinträchtigungen. Die nachfolgenden Aussagen beruhen auf meinen subjektiven Beobachtungen während meiner praktischen Arbeit als Museumspädagogin im Kulturhistorischen Museum Magdeburg und einer stichprobenartigen Betrachtung von Weiterbildungen und Leitfäden des Deutschen Museumsbundes. Es liegen bislang meines Wissens keine systematischen Studien zu inklusiven Angeboten für Menschen mit psychischen, neurologischen und kognitiven Beeinträchtigungen vor.

Barrierefreiheit wird immer noch vorrangig durch den Abbau von Barrieren für Menschen mit körperlichen Beeinträchtigungen, also beispielsweise für blinde Menschen oder Nutzer*innen von Rollstühlen, verstanden, wie der Leitfaden zu „Barrierefreiheit und Inklusion“, aber auch der Leitfaden „Bildung und Vermittlung im Museum gestalten“ zeigt. In ersterem wird zwar auf die wachsende Zahl von Kindern mit Lernschwierigkeiten und psychosozialen Beeinträchtigungen hingewiesen (Deutscher Museumsbund e. V. 2013: 7). Weiter heißt es auch „Bildnerisch-praktische, erforschende und multisensorische Vermittlungsformate richten sich auch an Menschen

[1] So sind abgesenkte Bordsteine nützlich für Menschen, die einen Rollstuhl oder einen Kinderwagen nutzen.

mit kognitiver Beeinträchtigung“ (Deutscher Museumsbund e. V. 2013: 45). Weitere Hinweise zur praktischen Umsetzung werden aber nicht gegeben. Demgegenüber wird die Anwendung von Tastmodellen für blinde und sehbeeinträchtigte Menschen oder die Gestaltung von Ausstellungen hinsichtlich der Sichtbarkeit der Texte und Exponate für Nutzer*innen von Rollstühlen ausführlicher besprochen (u. a. Deutscher Museumsbund e. V. 2013: 38–41, 2020: 34). Positiv fällt auf, dass in beiden Publikationen Empfehlungen zur Verwendung einfacher bzw. leichter Sprache gegeben werden (u. a. Deutscher Museumsbund e. V. 2013: 61, 2020: 19). Auch Angebote für Menschen mit Demenz haben sich einen Platz in der Museumslandschaft erobert, was auch mit dem demografischen Wandel in Verbindung steht (Deutscher Museumsbund e. V. 2013: 8). Ein Beispiel für den Stellenwert von Angeboten in diesem Bereich ist auch die zertifizierte Weiterbildung „Kulturvermittlung für Menschen mit Demenz, Schwerpunkt Museum“ von (de)mentia+art in Kooperation mit verschiedenen Partnermuseen ((de)mentia+art 2021a). Alle genannten Angebote und Empfehlungen sind natürlich sehr wichtig, reichen jedoch nicht aus. Menschen mit Autismus, selektivem Mutismus, Trisomie 21 oder auch Traumatisierungen werden kaum als Zielgruppen adressiert. Auch Empfehlungen, welche die speziellen Bedarfe inklusiver Schulklassen und Förderklassen berücksichtigen sind keinesfalls selbstverständlich. So findet sich im Leitfaden des Deutschen Museumsbundes „schule@museum“ ein Praxisbeispiel in dem mit einer Förderschule zusammengearbeitet wurde. In diesem Zusammenhang wird auch von einer unterrepräsentierten Zielgruppe gesprochen (Deutscher Museumsbund e. V. 2011: 36). Ansonsten ist aber nur allgemein von der gemeinsamen Inklusionsaufgabe von Schulen und Museen die Rede (Deutscher Museumsbund e. V. 2011: 15).

Auch das Studienprofil der Studiengänge „Museumsmanagement und -kommunikation“ (Hochschule für Technik und Wirtschaft Berlin 2021) und „Museumspädagogik / Bildung und Vermittlung“ (Hochschule für Technik und Wirtschaft Leipzig 2021) weist keine Module auf, die sich dezidiert den Bedarfen von Menschen mit Behinderungen widmen, womit natürlich nicht gesagt werden soll, dass diese Fragen keine Rolle im Studiengang spielen. In diesem Zusammenhang ist das Modul „Diversity und Museen“ der Hochschule für Technik und Wirtschaft hervorzuheben. Eine Beschäftigung in der Forschung hat ebenfalls eingesetzt, wie die Dissertation von Melanie Knaup zum Thema geistiger Behinderung und Museumspädagogik belegt. Die Autorin weist auch auf die geringe Beachtung dieser Zielgruppen in Museen hin (Knaup 2019: 365). In jüngerer Zeit zeigt sich eine zunehmende Wahrnehmung der hier besprochenen Zielgruppen zumindest in Leuchtturmprojekten wie dem Pilot Inklusion (2015–2017), das auch ein inklusives Tanzprojekt und das Projekt Touchdown 21, das gemeinsam mit Menschen mit Downsyndrom durchgeführt wurde, beinhaltet (Kunst- und Ausstellungshalle der Bundesrepublik Deutschland GmbH 2017: 36–40). Auch der Projektbericht selbst ist in Standardsprache und leichter Sprache verfasst. Darüber hinaus reflektiert die Publikation auch die marginale Rolle, die Inklusion in der Museumspraxis immer noch spielt und den geringen Mehrwert für Museen, der inklusiven Programmen zugeschrieben wird (Kunst- und Ausstellungshalle der Bundesrepublik Deutschland GmbH 2017: 100). Die Bundesakademie für Kulturelle Bildung Wolfenbüttel (2021) hat im Weiterbildungsangebot ebenfalls begonnen mit Partnermuseen zu arbeiten, die auch Angebote etwa für Menschen mit Lernschwierigkeiten offerieren. Auch der Bundesverband für Museumspädagogik erkennt inzwischen die Marginalisierung bestimmter Zielgruppen, wie der Artikel von Judith Schachtmann über Museumsangebote für Menschen mit Autismus-Spektrum-Störungen zeigt (Schachtmann 2019: 57–63). Die Vorreiterrolle, die Angebote im Bereich Demenz für die Sichtbarkeit der Zielgruppen mit kognitiven, neurologischen und psychischen Beeinträchtigen spielen, zeigt sich auch daran, dass (de)mentia+art seit Kurzem neben der zertifizierten Weiterbildung „Kulturvermittlung für Menschen mit Demenz“ auch eine Weiterbildung zur Kulturvermittlung für Menschen mit psychischen Beeinträchtigungen anbietet ((de)mentia+art 2021b).

Motivationen

Im Sinne der UN-Behindertenrechtskonvention (United Nations 2006) haben auch Museen den gesellschaftlichen Auftrag Teilhabe zu ermöglichen. Dennoch stellen sich viele Museen die Frage wie sich Aufwand, Nutzen und Bedarf zueinander verhalten, wenn entschieden werden soll, welche Zielgruppen angesprochen werden sollen. Damit eng verbunden ist die Frage, warum Museen Menschen mit kognitiven, neurologischen und psychischen Beeinträchtigungen bisher wenig als Zielgruppe wahrnehmen. Letzteres hängt eng mit dem traditionellen Selbstverständnis von Museen zusammen. Waren sie zunächst als „Musentempel“ eher einer bildungsbürgerlichen Elite vorbehalten, öffneten sich Museen ab den 1970er Jahren verstärkt neuen Zielgruppen und wandelten sich zu „Lernorten“ (Spickernagel und Walbe 1976). Beide Konzepte sind aber eng mit der Vermittlung von wissenschaftlichem Expert*innenwissen verbunden. Der Zugang der den Besucher*innen zu den Museumsexponaten ermög-

licht wird, ist diesem Selbstverständnis entsprechend primär kognitiver Natur. Dadurch entsteht implizit die Vorstellung, Vermittlung im Museum über emotionale und erfahrungsbasierte Zugänge sei nachrangig. Diese Haltung kommunizieren Museen bewusst und unbewusst nach außen, so dass auch die Wahrnehmung der Besucher*innen davon geprägt ist. Für viele Zielgruppen, etwa für Menschen mit Demenz, sind jedoch primär auf intellektuelle, sprach- und schriftbasierte Methoden setzende Zugänge nur eingeschränkt nutzbar. Konzepte, die stärker partizipativ und erlebnispädagogisch arbeiten, stellen Alternativen dar (Knaup 2019: 371).

Im Folgenden sollen derartige Ansätze an Praxisbeispielen aus dem Kulturhistorischen Museum Magdeburg erläutert werden, die vielleicht als Anregung dienen können, um neue Vermittlungsformate auszuprobieren. Die Beispiele zeigen auch, dass der Bedarf in den Zielgruppen nicht geweckt werden muss. Das Interesse und die Besuche von Menschen aus den entsprechenden Communitys, also z. B. von Förderschulen oder der Lebenshilfe, führten dazu, dass ich vor etwa drei Jahren begann Programme für Menschen mit kognitiven, neurologischen und psychischen Beeinträchtigungen am Kulturhistorischen Museum Magdeburg zu konzipieren. Meiner Erfahrung nach ist ein Mangel entsprechender Anfragen aus den genannten Gruppen eher darauf zurückzuführen, dass die Hürde für einen Museumsbesuch zu hoch ist, da die Museen scheinbar keine Anknüpfungspunkte bieten und die Museumsmitarbeiter*innen nicht für die Bedarfe der Zielgruppen sensibilisiert sind. In diesem Sinne dienen die Beispiele auch als Impuls die eigenen Wahrnehmungsmuster zu überprüfen und sich auf den fruchtbaren wechselseitigen Austausch einzulassen. In ähnlicher Weise hinterfragt auch Elke Kollar das Selbstverständnis der Museen kritisch und fordert eine Änderung der bestehenden Haltung (Kollar 2020: 10–16). Dieser Prozess hat bereits eingesetzt, wie der schon erwähnte Leitfaden für Bildung und Vermittlung zeigt, denn dort stehen Bereiche wie Freude, Erlebnis und Teilhabe gleichwertig neben dem Wissenserwerb (Deutscher Museumsbund e. V. 2020: 24).

Praxisbeispiele

Abb. 1 Das Kulturhistorische Museum Magdeburg, Foto: Charlen Christoph, Magdeburger Museen.

Das Kulturhistorische Museum Magdeburg wurde 1906 als Kaiser-Friedrich-Museum gegründet (Abb. 1). Das Zweispartenhaus beherbergt neben den Kunstsammlungen und der Stadt- und Schulgeschichte auch das Museum für Naturkunde Magdeburg. Die Dauerausstellung „Stadtgeschichte“ beinhaltet auch zahlreiche mittelalterliche und frühneuzeitliche Exponate, die im Rahmen archäologischer Ausgrabungen geborgen wurden. Der größte archäologische Fundkomplex stammt aus der Kloake des St. Annen Hospitals Magdeburg. Nach dem Wunsch des ersten Direktors Theodor Volbehr (1862–1931) sollte das Museum ein Haus sein „[…] das jedem Bewohner der Stadt das Verstehen der Kulturwelt, in der er lebt, erleichtert und damit seine Freude am Dasein vertieft“ (Kulturhistorisches Museum Magdeburg 2021). Dieser Satz kann auch als ganzheitliches Motto der heutigen Querschnittsabteilung „Öffentlichkeitsarbeit und Museumspädagogik“ verstanden werden. Im Folgenden sollen drei Praxisbeispiele aus dem Kulturhistorischen Museum Magdeburg kurz vorgestellt werden.

Abb. 2 Motivkarten, die für inklusive Führungen in der Stadt- und Schulgeschichte verwendet werden, Foto: Juliane Lippok, Magdeburger Museen.

1. Inklusive Führungen (Dauer: 1–1,5 h)

Eine Variante der klassischen Vermittlungsmethode „Chinesischer Korb“ sind Führungen mit Motivkarten.[2] Diese partizipative Führungsform ist für heterogene Gruppen von Menschen mit und ohne kognitive Beeinträchtigungen geeignet, da die Teilnehmenden selbst den Inhalt der Führung bestimmen. Im Kulturhistorischen Museum wird sie sowohl bei Regelschulklassen, als auch bei inklusiven Schulklassen und Förderschulklassen angewendet.

Zunächst wird die Schulklasse in Kleingruppen aufgeteilt. Jede Gruppe erhält drei Karten auf die ein Fragezeichen, ein Ausrufezeichen und ein Herz aufgedruckt sind (Abb. 2). In einem definierten Bereich des Museums dürfen die Gruppen selbstständig die Karten vor Exponaten platzieren, die ihnen besonders gefallen (Herz), zu

[2] Ich danke meiner Kollegin Franziska Gaumnitz-Freund (Dommuseum Ottonianum Magdeburg) für die Einführung in diese Methode.

denen sie etwas wissen (Ausrufezeichen) und bei denen sie noch eine Frage haben (Fragezeichen). Die Karten stehen dabei auch für verschiedene Zugänge: Die Herzkarte eröffnet einen emotionalen Zugang, die Ausrufezeichenkarte lädt dazu ein, das eigene Expert*innenwissen zu teilen und die Fragezeichenkarte stimuliert die Neugier. Es müssen nicht unbedingt alle Karten platziert werden. Es ist sinnvoll den Gruppen vorab zu sagen, wie viel Zeit ihnen zur Verfügung steht. Der Zeitbedarf richtet sich u. a. nach der Anzahl der Kleingruppen und der Größe des Raumes. Ein Bereich in dem dieses Format durchgeführt wird, ist die Dauerausstellung „Schulgeschichte“. Die von den Teilnehmenden ausgewählten Objekte sind sehr unterschiedlich. Herzkarten werden oft bei Exponaten platziert, die dem persönlichen Geschmack entsprechen, z. B. bei einem als attraktiv empfundenen Schulranzen. Das geteilte Expert*innenwissen kann von einer basalen Kenntnis des Exponats („Das ist ein Stift.“) über die Kenntnis des Verwendungszwecks („Das ist eine Feder, damit hat man früher geschrieben.“) bis zu weiterführenden Ergänzungen, die gerade bei Erwachsenen aus der Berufspraxis z. B. als Lehrer*in stammen, reichen. Oft gibt es auch hier biografische Anknüpfungspunkte („So einen Schulranzen hatte meine Mutter auch.“). Häufig werden Zweck und Funktion von Exponaten erfragt; das ist insbesondere bei fragmentierten archäologischen Objekten der Fall. Nach dieser Gruppenarbeitsphase, kommt die Gruppe wieder zusammen. Die Vermittlungsperson geht nun zu den gewählten Exponaten, erfragt warum das Objekt gewählt wurde, greift den Input auf und ergänzt mit eigenen Informationen.

Abb. 3 Historische Schulstunde im Historischen Klassenzimmer, Foto: Charlen Christoph, Magdeburger Museen.

Der Vorteil der Methode besteht in der von den Teilnehmenden selbst gesteuerten Exponatauswahl und dem Wechsel von Gruppenarbeit und Führungsphase. Die Konzentrationsfähigkeit wird durch diesen Wechsel von Ruhe und Bewegung gefördert. Darüber hinaus können die Teilnehmenden wählen, wie stark sie sich im Führungsteil einbringen möchten. Es besteht also auch die Möglichkeit nur in der Gruppenarbeitsphase am Auswahlprozess mitzuwirken, wobei sich gerade in inklusiven Gruppen die Teilnehmenden gegenseitig unterstützen können. Anschließend muss aber nicht jede*r der Teilnehmenden selbst sprechen, wird also nicht automatisch in den Fokus der Aufmerksamkeit gerückt. Selbstkompetenz und Selbstwirksamkeit werden so gestärkt. Es wird durch die Interaktion in den Führungen deutlich, dass sich die Teilnehmenden über die Möglichkeit sich selbstbestimmt einzu-

bringen und die Wertschätzung ihres Expert*innenwissens freuen. Allerdings ist eine offene Führungsstruktur anspruchsvoll. Die Führungsperson kann nicht auf ein vorgefertigtes Skript zurückgreifen und wird auch mit Fragen konfrontiert, die nicht unmittelbar beantwortet werden können. Das macht diese Formate aber auch sehr spannend, da man selbst dazulernt, neue Perspektiven entdeckt und oft auch besser versteht wie Exponatpräsentationen auf Besucher*innen wirken.

2. Historische Schulstunden (Dauer: 1–1,5 h)

Im historischen Klassenzimmer der schulgeschichtlichen Dauerausstellung werden Schulstunden u. a. im Stil der Deutschen Kaiserzeit durchgeführt (Abb. 3). Die Rollenspiele ermöglichen es den Schüler*innen spielerisch selbst zu erleben, wie sich „Schule früher“[3] angefühlt hat und sie ermöglichen es mit allen Sinnen zu lernen. Die Inhalte wie das Schreiben und Malen auf der Schiefertafel oder mit Feder und Tinte und das Ausprobieren der Schulregeln können flexibel an die Bedarfe der Schüler*innen angepasst werden. Die Historischen Schulstunden werden daher auch regelmäßig von Förderklassen gebucht. Es besteht für die Schüler*innen die Möglichkeit, die Erfahrungen mit der eigenen Lernwirklichkeit zu vergleichen. Die Stärken des Programms bestehen im emotionalen, erlebnisorientierten Zugang und der Verknüpfung zur eigenen Lebenswirklichkeit, was die Ausprägung eines historischen Bewusstseins und das Erlangen von Weltwissen fördert. Darüber hinaus können Fertigkeiten und Fähigkeiten spielerisch entwickelt werden. Gerade bei heterogenen Gruppen wie beispielsweise inklusiven Schulklassen ist es sehr wichtig spezielle Bedarfe im Vorfeld zu identifizieren, da Schreib-, Sprach,- und Lesekompetenzen auch einzelner Schüler*innen so berücksichtigt werden können und es nicht zu Unter- oder Überforderung kommt.

3. Schulgeschichtliche Führungen für Menschen mit Demenz (1 h)

Führungen für Menschen mit Demenz in der Dauerausstellung „Schulgeschichte“ und im Historischen Klassenzimmer haben durch den lebensweltlichen Bezug, den das Thema Schule bietet, häufig eine aktivierende Wirkung. Wie viel Beteiligung möglich ist, hängt von verschiedenen Faktoren wie dem Schweregrad und der Art der Demenz, aber – wie bei jedem Angebot – auch von der Persönlichkeit und den Vorlieben der einzelnen Personen ab. Auch körperliche Beeinträchtigungen der Teilnehmenden (Rollstuhl, Rollator etc.) sind zu berücksichtigen. Bis auf die Einstimmung und den Ausklang in der Dauerausstellung Schulgeschichte, sitzen die Teilnehmenden im Historischen Klassenzimmer. Der dialogisch strukturierte Hauptteil konzentriert sich auf einzelne Exponate des Historischen Klassenzimmers. Dabei gibt die Vermittlungsperson Impulse auch in Form von Fragen und Raum für den Input der Teilnehmenden. Es geht nicht darum Wissen zu erfragen, sondern Beobachtungen und damit verknüpfte Gefühle zu teilen. So könnte ein Einstieg beispielsweise so erfolgen: „Wir sind in einem alten Klassenzimmer. Was fällt Ihnen besonders auf?“ oder „Wie fühlt es sich an in diesem alten Klassenzimmer zu sitzen?“ Als praktisches Element besteht die Möglichkeit, auf Schiefertafeln zu schreiben und zu malen. Museen eignen sich gut für Angebote für Menschen mit Demenz, da die Teilnehmenden sowohl anhand von Objekten der Alltagsgeschichte als auch anhand von künstlerischen Arbeiten Lebensbezüge herstellen können. Dieser Vorgang in einer entspannten und sicheren Atmosphäre, aber auch an einem neuen und inspirierenden Ort, wird sehr positiv erlebt. Die Teilnehmenden äußern sich dazu oft direkt im Anschluss an die Veranstaltung und berichten darüber, sich an vieles erinnert zu haben und über die Freude über diese Erinnerungen zu sprechen. Im Kulturhistorischen Museum wird dieses Pilotprojekt mit Tagespflegeeinrichtungen durchgeführt.

Bedingungen für gutes Gelingen und Stolpersteine

In der praktischen Museumsarbeit sind neben Konzepten und Inhalten viele Faktoren von Bedeutung, die eher im Arbeitsumfeld und der sozialen Umgebung zu verorten sind. Diese sollen im Folgenden in Bezug auf das Thema des Beitrags kurz zusammengefasst werden.

[3] So der Titel des Programms in der Daueraustellung „Schulgeschichte“.

1. Kommunikation

Ein wichtiger Faktor ist die Kommunikation zwischen Museum und Zielgruppe. Es ist wichtig zu fragen, welche Bedarfe die Zielgruppe hat und im Idealfall die Angebote gemeinsam zu entwickeln oder zumindest im Rahmen von Testläufen zu modifizieren. In der Praxis sind alle Akteur*innen wie Museum, Schule und Tagespflegeeinrichtungen aber stark in das Tagesgeschäft eingebunden, sodass Angebote schnell und mit möglichst wenig Aufwand gebucht werden müssen. Kommunikation kommt hier häufig zu kurz. Daher ist es nötig, dass sowohl museumsseitig als auch seitens der Zielgruppen ein Grundverständnis der jeweiligen Bedarfe vorhanden ist. Für mich als Vermittlerin ist es beispielsweise wichtig zu wissen, ob in einer inklusiven Klasse Kinder aus dem autistischen Spektrum sind oder Kinder einen Rollstuhl nutzen, damit ich Wege planen oder einen Rückzugsraum bereitstellen kann. Werden diese Bedarfe nicht kommuniziert wird ein gewinnbringender Museumsbesuch für Kinder und Jugendliche mit und ohne Beeinträchtigung erschwert.

2. Kompetenzen

Je nach Programm können auch Kompetenzen die die Kinder und Jugendlichen mitbringen von Bedeutung sein. So ist die Sprach-, Lese- und Schreibkompetenz im Praxisbeispiel „Historische Schulstunden“ relevant. In diesem Format ist häufig ein hoher Grad von Inklusion möglich, da von der Berücksichtigung verschiedener Kompetenzstufen beispielsweise auch Kinder mit Fluchterfahrungen, die noch nicht lange in Deutschland leben und dementsprechend erst anfangen Deutsch zu lernen, stark profitieren. In den hier beispielhaft vorgestellten Programmen werden besondere Bedarfe von Förderklassen häufiger kommuniziert. Die Selbstverständlichkeit, mit der Inklusion in Regelklassen oft trotz hoher Klassenstärken und zu wenig Personal gelingen soll, führt zu einer geringeren Sensibilität in diesem Bereich. Auch eine Studie der Aktion Mensch von 2019 zur Inklusion im schulischen Bereich kommt zu einem ähnlichen Fazit (Hess u. a. 2019). Da auch viele Mitarbeiter*innen in Museen wenig geschult für die Bedarfe von Menschen mit neurologischen, kognitiven oder psychischen Beeinträchtigungen sind, kann auf beiden Seiten Frustration entstehen. Die Frage lautet daher: Wie kann das gegenseitige Verständnis wachsen? Wie bereits ausgeführt gibt es bisher nur wenige Weiterbildungen, die explizit den Bereich neurologischer, psychischer und kognitiver Beeinträchtigungen in den Blick nehmen. In Aus- und Weiterbildung sollten diese Themen eine größere Rolle spielen, aber auch der Austausch zwischen Menschen die bereits in der Praxis an derartigen Projekten arbeiten, kann sehr gewinnbringend sein. Für einen derartigen Austausch stehe ich natürlich auch persönlich sehr gerne zur Verfügung. Eine Konsequenz dieses verstärkten Dialogs könnte sein, dass auch Praxisbeispiele, die verschiedene Zielgruppen in den Blick nehmen verstärkt Niederschlag in Leitfäden und auf Websites finden.

3. Perspektivwechsel

Für Museen beginnt der Prozess der Inklusion zunächst mit einem Perspektivwechsel, der es ermöglicht die genannten Zielgruppen selbstverständlich als Nutzer*innen des Museums zu sehen. Der erste Schritt ist also, offen für Anfragen zu sein und aktiv Angebote zu machen. Wie die genannten Beispiele zeigen, kann an vorhandene Programme angeknüpft und auch im Rahmen der bestehenden personellen und finanziellen Möglichkeiten gearbeitet werden. Die ersten Impulse gehen naturgemäß häufig von den Abteilungen für Bildung und Vermittlung aus, sollten aber einen Prozess anstoßen, der das ganze Haus von der Leitungsebene bis zur Kasse einbezieht und letztlich auch zur gezielten Einplanung von Ressourcen im Haushaltsplan führt. Beispielsweise kann im Rahmen von Lehrer*innenfortbildungen vermittelt werden, dass Angebote im Haus bestehen, dabei kann nach Wünschen seitens der Zielgruppen gefragt werden. Genauso wichtig ist es aber auch die eigenen Bedarfe, etwa nach Information im Vorfeld, zu kommunizieren. So können beispielweise passgerechte Buchungsformulare entwickelt werden. Auch das persönliche Gespräch mit Gruppen und Einrichtungen, die bereits das Museum besuchen, kann hilfreich sein. Darüber hinaus bauen Pilotprojekte Schwellen ab und Netzwerke auf.

Positive Effekte für Museen

Welche positiven Effekte ergeben sich für Museen, wenn sie ihrem Auftrag, Teilhabe auch für Menschen mit neurologischen, kognitiven und psychischen Beeinträchtigungen zu ermöglichen, nachkommen? Zunächst werden im Sinne des *audience developement* neue Zielgruppen erschlossen. Wie die Beispiele zeigen, ist der Bedarf in den Communitys durchaus vorhanden, aber der Zugang zur Institution eher erschwert. Da wirtschaftliche Erwägungen für Museen zunehmend eine Rolle spielen, kann eine verstärkte Hinwendung zu den genannten Zielgruppen auch eine Steigerung der Besucher*innenzahlen und der Eintrittsgelder bedeuten. Kamen Förderklassen vor vier Jahren nur gelegentlich ins Kulturhistorische Museum, sind sie inzwischen mit einem festen Teil von 10 % in Programmen der Schulgeschichte vertreten – Tendenz steigend. Das zeigt, dass ein verändertes Selbstverständnis auch bestehenden Zielgruppen wie Förderklassen oder inklusiven Schulklassen einen besseren Museumsbesuch ermöglicht. Darüber hinaus wird das Profil des Museums geschärft und eine positive Wahrnehmung in der Stadtgesellschaft erzielt, was wiederum zu mehr Berichterstattung und größerer Bekanntheit des Museums führt. So führten beispielsweise die Angebote für Menschen mit Demenz im Kulturhistorischen Museum zu Anfragen seitens des Stadtmarketings Magdeburg. Darüber hinaus können Zugänge die Emotion und Erlebnis einen höheren pädagogischen Wert einräumen auch benutzt werden, um Programme im Museum zu entwickeln, die durchlässiger für verschiedene Zielgruppen sind. Ein Beispiel dafür ist die Kulturnacht der Stadt Magdeburg, die jedes Jahr im September Kultureinrichtungen auf neue Art bespielen und vielen Menschen Zugang ermöglichen soll. Basierend auf den verschiedenen Erfahrungen mit erlebnispädagogischen Formaten des Museums wurden szenische Führungen konzipiert, bei denen heterogene Gruppen spielerisch die Ausstellungen erkunden können. Dem Wunsch des ersten Direktors des Kulturhistorischen Museums entsprechend, kann so die Freude am Dasein für alle, nicht zuletzt auch für das museumspädagogische Team, vertieft werden (Abb. 4).

Abb. 4 Miteinander die Freude am Dasein vertiefen. Das museumspädagogische Team während der Kulturnacht, Foto: Magdeburger Museen, Charlen Christoph.

Fazit

Die Schritte auf dem Weg zum inklusiven Museum sind oft klein und unvollständig, haben aber dennoch eine beachtliche Wirkung. Kommunikation und Kenntnis der gegenseitigen Wünsche und Möglichkeiten schaffen ein vertrauensvolles Miteinander von Museen und Zielgruppen. Auch wenn Inklusion Menschen gleichberechtigt miteinander verbindet, bleiben die Verschiedenheiten doch bestehen. Daher ist es meines Erachtens wichtig, auch spezielle Bedarfe zu berücksichtigen. Nicht jeder Angebotstyp ist für alle Menschen gleichermaßen geeignet. Letztlich entscheiden die Teilnehmenden selbst, welches Format passt und sie müssen daher in den Konzipierungsprozess einbezogen werden. Das gilt gleichermaßen für Menschen mit und ohne Beeinträchtigung. Wie die Praxisbeispiele zeigen, ermöglicht eine Änderung der Haltung selbst ohne grundlegende Umstrukturierungen oder hohen Personal- und Kostenaufwand mehr Teilhabe. Aus den ersten Schritten ergeben sich fast zwangsläufig weitere. Im Kulturhistorischen Museum werden bei der anstehenden Neuaufstellung der Dauerausstellung Schulgeschichte die Bedarfe von Menschen mit körperlichen, psychischen, kognitiven und neurologischen Beeinträchtigungen gezielt berücksichtigt. Das Vermittlungsprogramm für Schulklassen beinhaltet inzwischen auch bei Sonderausstellungen immer Angebote, die inklusiv konzipiert werden und daher von Vorschulgruppen, Grundschulen und Förderschulen genutzt werden können. Diese Entwicklung wird allerdings, gerade im Bereich der Demenzführungen und der ersten Veranstaltungen mit der Lebenshilfe, durch die Corona-Pandemie gebremst, da durch den notwendigen Infektionsschutz personale Vermittlung für Gruppen nicht oder nur eingeschränkt möglich ist. Auch wenn die personale Vermittlung gerade in diesem Bereich schwer zu ersetzen ist, gibt es beispielsweise für Menschen mit Demenz digitale Vermittlungsformate ((de)mentia+art 2021c). Darüber hinaus wird es nun noch wichtiger Menschen mit psychischen, kognitiven oder neurologischen Beeinträchtigungen auch als Individualbesucher*innen stärker einzubeziehen.

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Neanderthal: Memories – Spielbare „Erinnerungen“ an die Steinzeit

Anna Riethus und Carolin Winter

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Neanderthal: Memories – Spielbare „Erinnerungen“ an die Steinzeit

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Abstract

Together with the Neanderthal Museum (Mettmann, Germany) as well as blind and visually impaired people, the Association for the Blind and Visually Impaired e.V. (BSVN) developed an inclusive museum tour within the scope of its research project NMsee (2019–2022). By combining different infrastructural and digital components, the tour leads guests through the museum’s permanent exhibition. An important component of this new tour is the mobile game *Neanderthal: Memories*. The following article presents the project and its components, including the game *Neanderthal: Memories*, and reflects on the collaboration between the archaeology museum and game development from both perspectives.

Keywords

game, museum, Neanderthals, participation, inclusion

Zusammenfassung

Im Zuge des Forschungsprojekts NMsee (2019–2021) entwickelte der Betroffenenverband BSVN e.V. gemeinsam mit dem Neanderthal Museum in Mettmann sowie blinden und sehbehinderten Menschen einen inklusiven Rundgang, welcher Gäste durch die Dauerausstellung des Museums führt. Eine wichtige Komponente dieses neuen Konzepts ist das Mobile Game *Neanderthal: Memories*. Das Game dient dabei als inklusive Museums-Tour und ist eine Teilkomponente eines inklusiven Gesamtkonzepts für das Archäologiemuseum im Neandertal, das auch eine neue Infrastruktur in der Dauerausstellung enthält. Der nachfolgende Beitrag stellt das Projekt NMsee und das Game *Neanderthal: Memories* vor und reflektiert die Zusammenarbeit von Archäologiemuseum und Game Development aus beiden Perspektiven.

Schlagwörter

Game, Museum, Neandertaler, Partizipation, Inklusion

Das kooperative Forschungsprojekt „NMsee“[1]

Wie kann ein inklusiver Museumsbesuch für blinde und sehbehinderte Besucher*innen gestaltet werden? Welche Bedürfnisse müssen erfüllt, welche digitalen Technologien können wirkungsvoll eingesetzt werden? Gemeinsam mit dem Blinden- und Sehbehindertenverband Nordrhein e.V. (BSVN) setzte sich das Neanderthal Museum in Mettmann mit diesen Fragen innerhalb des Projekts NMsee auseinander (2019–2022). In diesem Projekt wurde ein inklusiver Zugang zur Dauerausstellung des Neanderthal Museums entwickelt und wissenschaftlich evaluiert.[2] Das Hauptziel des Projekts war es, anstatt eines barrierefreien Museumsangebots einen inklusiven und möglichst selbstbestimmten Rundgang für Menschen mit Sehbehinderung zu generieren. Das Projekt bestand dabei aus dem partizipativen Entwicklungsprozess der verschiedenen Komponenten des neuen Rundgangs sowie aus drei Evaluierungsphasen. Im letzten Projektjahr wurden die Ergebnisse der Evaluierungen miteinander verglichen und der Einfluss der einzelnen Komponenten auf die Inklusivität des Neanderthal Museums abschließend bewertet.

Da bei der Entwicklung des Rundgangs und des Mobile Games die Nutzer*innenfreundlichkeit für Gäste mit Sehbehinderung ein unbedingt zu erreichendes Ziel war, wurde das Projekt iterativ und partizipativ angelegt: in Form von sechs Prototypen wurde das Game schrittweise mit blinden und sehbehinderten Personen getestet. Ein weiteres Ziel war die Untersuchung des Effekts von Infrastruktur und Mobile Game auf die Inklusivität des Museumsbesuchs von blinden und sehbehinderten Menschen. Dazu wurden in drei Evaluierungsphasen Besucher*innen-Beobachtungen mit sehenden, sehbehinderten und blinden Freiwilligen in der Dauerausstellung durchgeführt. Diese enge Zusammenarbeit und die regelmäßigen Usability Tests[3] mit Betroffenen waren essenziell für das Projekt und werden im nachfolgenden Text näher beschrieben (siehe Abschnitt *Museum, Game Development und Menschen mit Behinderung – Die Zusammenarbeit*).

Ein zentrales Ziel von NMsee war die Entwicklung eines inklusiven[4] Mobile Games, das direkt im Museum gespielt wird und Gäste durch die Dauerausstellung führt. Dabei sollten die Inhalte der Dauerausstellung – Humanevolution, Neandertaler, Steinzeit & Archäologie – vermittelt werden. Das Game musste in seiner Funktion als inklusive Museumstour mehrere grundlegende Bedürfnisse erfüllen, welche vor Projektstart mit Betroffenen durch Begehungen und Interviews (2017–2019) definiert wurden:

- sichere Orientierung im Museum
- hochwertige Informationen über die Themen der Dauerausstellung
- barrierefreie Bedienbarkeit ohne vorherige Einschulung

Das Game sollte Spielenden also gleichzeitig Wissen über die Steinzeit, eine unterhaltsame Beschäftigung und eine Orientierungshilfe zur Verfügung stellen. Diese Funktionen sollten zudem unabhängig vom Sehvermögen selbstständig bedienbar sein. Die hier genannten Grundbedürfnisse, die für den Großteil der Museumsbesucher*innen als selbstverständlich gelten, sind in der Regel nicht Teil eines Museumsbesuchs von blinden und sehbehinderten Menschen. Mit abnehmendem Sehvermögen geht zunehmend die Selbstbestimmung verloren: immer weniger Informationen stehen zur Verfügung, immer weniger Entscheidungen über die Gestaltung des eigenen Besuchs können ohne fremde Hilfe gemacht werden. So mussten beispielsweise blinde Tester*innen ohne Restsehvermögen in unseren vorbereitenden Evaluierungen während mehr als 90 % der Dauer ihres Besuchs Hilfe von Begleitpersonen oder dem Museumspersonal in Anspruch nehmen. Ein solcher größtenteils fremdbestimmter Besuch ist vor allem für blinde und sehbehinderte Erwachsene oft eine unangenehme, dezidiert exkludierende Erfahrung. Auch die Nutzung von „Behindertenangeboten“, die nur von einer bestimmten Gruppe von Personen genutzt werden oder werden können, stellt oft eine exkludierende Erfahrung dar. Selbstbestimmung und die Nutzbarkeit für alle Gäste waren deshalb die beiden zentralen Design-Ziele für unseren Development-Prozess.

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1 Für weitere Informationen über das Projekt NMsee in englischer Sprache siehe Riethus 2020.

2 Ermöglicht wurde das Projekt durch Fördermittel von der Stiftung Wohlfahrtspflege NRW, der Kämpgen-Stiftung, der NRW-Stiftung und des Landschaftsverbands Rheinland.

3 In Usability Tests (engl. „usability“ im Sinne von Benutzerfreundlichkeit) wird die Software von und mit der Zielgruppe getestet und auf verschiedene Punkte hin überprüft, z. B. ob die vom Entwickler gewünschte Spielerfahrung erreicht wird oder ob die App ohne Probleme bedienbar ist. Die Zielgruppe wird bei der Nutzung der App und beim Spielen des Games zunächst nur beobachtet und anschließend zum eben Erlebten befragt. Auf Basis der Beobachtungsprotokolle und des Feedbacks wird die App stufenweise verbessert.

4 Im Sinne von: „…von Menschen mit und ohne Sehbehinderung gleichermaßen bedienbares …“.

Das nachfolgend näher beschriebene Game ist Teil eines Gesamtkonzepts im Neanderthal Museum, das neben der spielerischen Informationsebene auch eine Infrastruktur, bestehend aus Bodenleitsystem, taktilen Schildern mit Braille- und Profil-Schrift und Taststationen enthält (Abb. 1).[5] Während des Rundgangs mit Neanderthal: Memories nimmt das Game an jeder Taststation Bezug auf die taktilen Ausstellungselemente und stellt in der Story und in einer vertiefenden Informationsebene Details dazu zur Verfügung. Die Spielenden können im Game je nach Bedürfnis, Zeit und Energie den Informationsgrad ihres Rundgangs selbst bestimmen. So kann z. B. ein*e sehende*r Besucher*in mit Fokus auf das Game gezielt nur die Story durchspielen und so etwa eine knappe Stunde im Museum verbringen; oder ein*e sehbehinderte*r Besucher*in die Story mit den Informationen aus der Vertiefungsebene ergänzen, und den Rundgang auf bis zu 2,5 Stunden erweitern. Auch für Gäste, die allein an den Fachinformationen und der Indoor-Navigation[6] interessiert sind, besteht die Möglichkeit, das Mobile Game zu nutzen: alle spielerischen Inhalte können pro Station übersprungen bzw. ausgelassen werden.

Abb. 1 Die Infrastruktur in der Dauerausstellung, die dem Game zugrunde liegt (© Projekt NMsee).

Neanderthal: Memories – Ein inklusives Game über Neandertaler*innen, Steinzeit & Evolution

Nami, Lemminki und die KI – Die Story

Neanderthal: Memories hat den Anspruch, die Inhalte der Dauerausstellung im Neanderthal zu vermitteln. Auf Basis eines Konzeptentwurfs der Projektleitung wurden deshalb von 2019 bis 2020 mit dem Game-Design-Studio Monokel GbR aus Köln verschiedene Ansätze für das Game Design getestet und ein Game-Design-Prototyp entwickelt. Um die oben genannte Aufgabenstellung zu bewältigen, mussten wir eine Story finden, die sowohl emotional ansprechend ist als auch eine Erzählposition erlaubt, aus der Inhalte über Steinzeit, Humanevolution und Archäologie erläutert werden. Eine schwierige Aufgabe: Die ersten Entwürfe für die Handlung beinhalteten

5 Gestaltung und Umsetzung der neuen Infrastruktur: Inkl. Design GmbH, Berlin (2019–2021); Game Design des inklusiven Mobile Games: Monokel GbR, Köln (2019–2020); Konzept-Entwicklung, Sound Design, Game Development und Beacon-basierte Indoor-Navigation: Wegesrand GmbH & Co. KG (2020–2022); Projektleitung, Konzeptidee, Narrative Design: Anna Riethus, NMsee (2019–2022).

6 Indoor-Navigation ist die Standortbestimmung von Personen, Robotern, Lieferungen, Fahrzeugen und ähnlichem im Innenbereich. In unserem Projektkontext bezeichnet der Begriff die technischen Orientierungshilfen auf Basis von Beacon-basierter Standortbestimmung für Personen im Museumsgebäude.

verschiedene Szenarien, beginnend bei einer Rettungsgrabung, einem erkundbaren Lager von Jäger*innen und Sammler*innen, bis hin zu einer Art Escape Game mit einer Bombe, die es zu entdecken galt.[7]

Im Neanderthal Museum wird ein differenziertes, aktuelles Bild unserer Vorfahr*innen vermittelt, welches diese als intelligente, empathische und soziale Persönlichkeiten darstellt. Zu oft werden Hominine, und besonders Neandertaler*innen, auf Klischees reduziert. Auch wurden in den vorbereitenden Workshops des Projekts (Frühjahr 2019) beim Austausch mit der Hauptzielgruppe, also Menschen mit Sehbehinderung, vor allem Fragen zu möglichen Lebenswelten der Steinzeit gestellt: Wie waren steinzeitliche Gesellschaften organisiert? Wie wurden Kinder gewickelt und getragen? Wurde gestillt? Was haben Leute damals gegessen? Welche Kleidung trugen sie? Wie gingen Menschen damals miteinander um?[8] Diese Themenschwerpunkte sollten im Game und dessen Story aufgegriffen und Menschen der Steinzeit als nahbare, soziale Persönlichkeiten dargestellt werden. Ziel war also, eine Story zu schaffen, die Gästen im Gegensatz zur klassisch nüchternen Museumsausstellung einen empathischen Bezug zu jenen Menschen verschafft, über deren Leben in archäologischen Werken geschrieben wird.

Die Geschichte des Spiels sollte also vor allem – soweit möglich – Einblick in eine steinzeitliche Lebenswelt liefern. Die Story schlug den Weg ein, aus der Perspektive einer fiktiven Person aus der Steinzeit zu berichten. Um eine gemeinsame Basis mit den Besucher*innen zu haben, wurde gezielt nicht ein*e Neandertaler*in als Hauptcharakter gewählt, sondern eine ältere *Homo-sapiens-sapiens*-Frau, die als Jägerin und Sammlerin etwas nach dem derzeit angenommenen Ende der Neandertaler-Populationen in Europa etwa zur Zeit der letzten Eiszeit lebte. Nami (ein rein fiktiver Name), der Hauptcharakter, führt die Spielenden durch ihre Erinnerungen an ihr Leben in der Steinzeit mit ihrem Sohn Lemminki (ebenfalls ein fiktiver Name) und ihrer Familie (s. a. Abb. 2).

Abb. 2 Key Visual des Games Neanderthal: Memories (© Projekt NMsee).

In der Story von *Neanderthal: Memories* wird ein Konflikt in Form einer sehr alten, sehr einfachen Situation aufgebaut: eine Mutter, die sich um die Zukunft ihres Kindes sorgt. Wenn sie es nicht mit ausreichend Wissen zum (Über-)Leben ausstattet, wird es früh sterben. Gleichzeitig kommt es immer wieder zum Konflikt zwischen der älteren, bedächtigen Nami, und dem jungen, impulsiven Lemminki. So konnte die Protagonistin des Spiels aus ihrer nachvollziehbaren Perspektive über ihre täglichen Konflikte oder über lange vor ihr lebende Menschen

7 Die Story des Spiels sowie alle Dialog-Texte und das Character Design stammen von A. Riethus, Projektleitung NMsee. Diese Aufgabenverteilung wurde gewählt, da sie die Wege zum Abgleich der Story mit dem Neanderthal Museum sehr kurz und agil hielt. Für gewöhnlich werden diese Inhalte auf Basis von Briefings von freiberuflichen Autor*innen durch Wissenschaftler*innen verfasst. Im Neanderthal Museum haben wir bis dato jedoch gute Erfahrungen damit gesammelt, auch die kreative Textproduktion innerhalb des Teams stattfinden zu lassen. Wichtig ist hierbei, die Textentwürfe möglichst vielen Personen unterschiedlicher Abteilungen und Branchen zum Lektorat vorzulegen. Im Fall von *Neanderthal: Memories* waren dies: Ausstellungsmanagement, Museumspädagogik und Direktion Neanderthal Museum; freiwillige Testerinnen des Projekts NMsee; Verwaltungsmitarbeiter*innen BSVN e.V.; freiberufliche Fantasy-Autorin; Projektteam Wegesrand GmbH & Co. KG.

8 Fragen aus Notizen der Projektleitung vom 2. Konzept-Workshop im BfW Düren, Mai 2019.

(die Neandertaler, welche im Spiel als die „Ältesten“ bezeichnet werden) berichten und Vergleiche anstellen, ohne ständig eine Art trennende Linie zwischen sich und den User*innen zu ziehen. Hauptcharakter und Spielende erleben dadurch Gemeinsamkeit, Ähnlichkeit und Verständnis; der Charakter und ihre Ansichten sind bezugsfähiger.

Ausgangspunkt der Geschichte ist, dass der Geist[9] der alten Jägerin Nami neuerdings das Neanderthal Museum heimsucht: Nami hat große Teile ihrer Erinnerungen an ihre letzte Reise mit ihrem Sohn Lemminki verloren, und kann sich nun nicht mehr daran erinnern, ob ihr Sohn es sicher zum Rest der Familie ins Sommerlager geschafft hat. Um Nami zu erlösen und ihrem Geist Ruhe zu verschaffen, müssen wir mit ihr die verschiedenen Objekte im Museum besuchen, die Nami an ihr ehemaliges Leben und die Reise erinnern. An jedem Objekt gibt es neue Teile von Erinnerungen zu entdecken und zu beeinflussen, denn Nami bittet uns bei Erinnerungslücken um Hilfe (s. a. Abb. 3). An diesen Stellen im Spiel müssen wir entscheiden, welche Ratschläge und welche Erziehung Nami ihrem Sohn hat angedeihen lassen; was war also in der Steinzeit auf Basis des bisher Gehörten sinnvolles Verhalten?

An dieser Stelle zeigt sich ein interessanter Unterschied beim Schreiben von Games im Vergleich zu beispielsweise Audio-Guide-Texten für Museen: Es liegt in der Natur eines Spiels, Spieler*innen über Feedback die Regeln beizubringen, und zu eigeninitiativer Problemlösung zu motivieren. Zu diesem Feedback-System gehört notwendigerweise auch die Möglichkeit, zu scheitern. Ein Audio-Guide muss allerdings selbst bei einer falschen Eingabe fortsetzbar sein; wir konnten die Gäste nicht bei einer falschen Entscheidung an der dritten Station zurück zum Museumseingang schicken.[10] Deshalb entschieden wir im Zuge des Game Developments, unser verzweigtes Narrativ (auch Branching Narrative[11] genannt) regelmäßig zu einem Hauptstrang zurückkehren zu lassen. So können Gäste die Reaktionen der Spielcharaktere sowie das Ende der Geschichte beeinflussen, ohne dass nach einer Fehleingabe das Game neu begonnen werden muss.

Die gewählte Perspektive innerhalb der Story – jene einer eiszeitlichen Jägerin – bringt jedoch auch Beschränkungen mit sich: Wie kann Nami, die vor tausenden von Jahren im eiszeitlichen Europa lebte, einem Gast im Heute von archäologischer Forschung berichten? Auch kann Nami nicht über Vergangenes erzählen, das sie selbst weder erlebt noch erzählt bekommen haben kann. Die Erzählung über das wichtige Ausstellungsthema Humanevolution kann deshalb nur sehr vage stattfinden. Genauso verhält es sich mit Erzählungen über die Zukunft: Nami kann in Erinnerungen oder im Dialog mit Gästen kaum über archäologische Ausgrabungen oder Analysemethoden sprechen. Davon abgesehen wäre es wenig authentisch, von einem eiszeitlichen Charakter die Bedienung eines Smartphones erklärt zu bekommen. Es musste also zusätzlich eine Möglichkeit gefunden werden, sowohl detaillierte Fachinformationen als auch bedienungsbezogene Hinweise zu vermitteln.

Bei *Neanderthal: Memories* wählten wir die Lösung, detaillierte Informationen zu den Themen der Dauerausstellung über von Kolleginnen aus dem Museumsteam eingesprochene Texte zur Verfügung zu stellen. Hier besteht keine Einschränkung wie in der Haupt-Story mit Nami und Lemminki, und es können viele Detailinformationen vermittelt werden. Dabei zu bedenken ist aber, dass unsere Prototypen-Tests gezeigt haben, dass User*innen diese zusätzlichen Informationen nur zweitrangig nutzen: sofern die jeweilige Person nicht

9 Das Setting einer Interaktion mit einem Geist über „Raum-Zeit-Portale“ per KI hat auch den Zweck, durch eine klar fiktive Rahmenhandlung auf den fiktiven Anteil im Game hinzuweisen. Wichtig war, dass Spielende schnell über den fiktionalen Anteil der Story informiert werden.

10 Unsere Entscheidung ist dabei keineswegs die sprichwörtliche „end of the line“: es wäre spannend, ein Museums-Game zu kreieren, das User*innen zurück zu „Los“ schickt, wenn sie ihren Charakter einmal zu viel in den Abgrund haben springen lassen. Da bei der Entwicklung von *Neanderthal: Memories* der inklusive Aspekt des Games im Vordergrund steht, und es für Gäste mit Sehbehinderung schwer ist, sich im unbekannten Gebäude zurecht zu finden, haben wir von dieser Idee Abstand genommen.

11 Eine „Branching Narrative“ ist eine interaktive Form des Storytellings, bei der sich (ähnlich wie bei einem Entscheidungsbaum) der Verlauf der Geschichte verzweigt und verschiedene Richtungen nehmen kann, basierend auf den getroffenen Entscheidungen der Spielenden. Bei einer Entscheidung für Dialog-Option A nimmt die Handlung demnach einen anderen Verlauf als bei einer Entscheidung für Option B. In *Neanderthal: Memories* können Besucher*innen an jeder Spielstation eine solche „Branching-Narrative-Entscheidung“ treffen und damit Einfluss auf die Geschichte nehmen. Damit die Geschichte nicht ausufert, werden die Handlungsstränge am Ende jeder Spielstation wieder zu einem Hauptstrang zusammengeführt. Die Summe aller getroffenen Entscheidungen hat erst Auswirkungen auf die letzte Station und das Ende der Geschichte.

dezidiert für wissenschaftliche Informationen ins Museum kommt, liegt der Fokus beim Besuch vor allem auf der Haupt-Story von Nami und Lemminki.

Für die Hinweise zur Bedienung des Games, die Menüführung und die Navigationshinweise, die zwecks inklusiver Bedienbarkeit vollständig auditiv sein müssen, wählten wir einen zusätzlichen Charakter außerhalb des eiszeitlichen Haupterzählstrangs: eine (fiktive) künstliche Intelligenz (KI), welche die Spielenden während der Game-Nutzung begleitet und unterstützt.

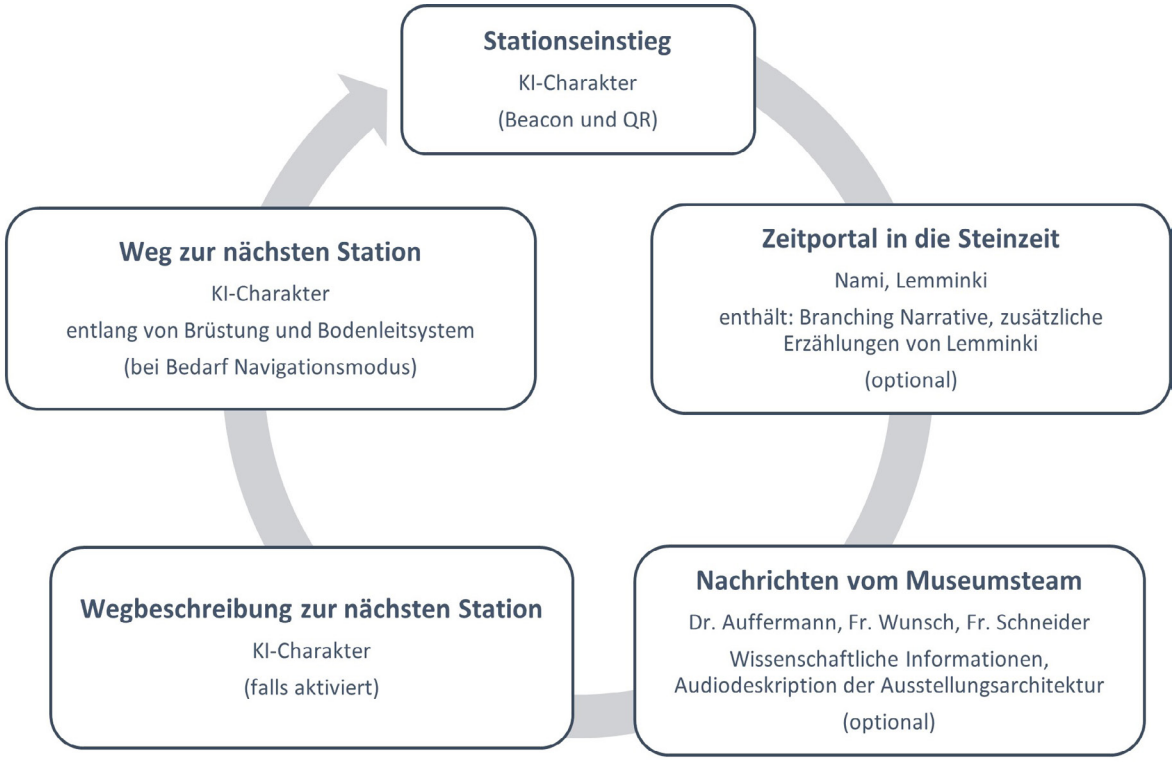

Abb. 3 Schematische Darstellung des Stationsablaufs im Game (© Projekt NMsee).

Bedienung ohne Barrieren

Wie ein spielbares Hörbuch ergänzt das Mobile Game auf dem jeweils eigenen Endgerät die neuen Tastangebote mit einer allen Gästen zugänglichen Informationsebene. Inspiration für diese Art von Gameplay waren sogenannte Audio Games[12], also Spiele, deren gesamtes Design auf das Hörvermögen der Spielenden ausgelegt ist. Bei dieser Art Game werden Spielwelt, Spielcharaktere, Dialoge oder Handlungen und Entscheidungen nur gehört, selten gibt es visuellen Input. Im Vergleich dazu gibt es auch auf Inklusivität ausgelegte Spiele wie z. B. „Frequency Missing“, das an der Universität Skövde entwickelt wurde. Es greift den visuellen Stil eines Point-and-Click-Adventures auf und schafft mit einem sehr klaren Sound-Design[13] und der Vibrationsfunktion des Smartphones ein ebenfalls ohne Sehvermögen bedienbares Game (Wilhelmsson u. a. 2017). Der Vorteil von rein auditiv gesteuerten

12 Beispielsweise die folgenden Titel: *Papa Sangre*, *The Nightjar*, *Sound of Magic*.

13 Wichtig ist, dass alle Spielelemente und Aktionen mit einem klar differenzierbaren Sound gekennzeichnet werden; beispielsweise der Wechsel zwischen Menüelementen, das Springen des Charakters oder verschiedene Kampfaktionen. Auch müssen diese Elemente und Aktionen ohne visuelle Orientierung am Bildschirm gefunden werden können; also z. B. durch die Zuweisung von Nummerntasten oder durch das Verwenden von Screenreader-ähnlichen Wischgesten, mit denen von Element zu Element gesprungen wird. Ein sehr gutes Tool für die Entwicklung von inklusivem Game Play sind die APX Cards der AbleGamers Charity (2018), deren Inhalte auch online unter https://accessible.games/accessible-player-experiences/ nachzulesen sind (letzter Aufruf am 30.04.2021).

Games ist, dass sie eines der wichtigsten Bedürfnisse von User*innen mit Sehbehinderung erfüllen, aber auch beim Museumsbesuch den Fokus von Personen mit Sehrest oder gewöhnlichem Sehvermögen nicht strikt an das Smartphone fesseln. Durch diesen Fokus auf die gehörten und ertasteten Sinneseindrücke können Gäste sich mit dem Game alle Inhalte gleichberechtigt erschließen, ohne dass relevante visuelle Inhalte unerkannt bleiben, oder für User*innen mit Sehvermögen oder Sehrest eine Art Konkurrenz zwischen Mobile Game und Ausstellungsbesuch entsteht (Abb. 4).[14]

Neanderthal: Memories lässt sich insofern am besten der Kategorie der Audio Games zuordnen. Es wird über die gesprochenen Hinweise von Spielcharakteren und ein einfaches System von Wischgesten bedient, die sich an der etablierten barrierefreien Bedienung von Smartphones per Screenreader[15] orientieren. Für die Entwicklung war zudem essenziell, dass das Game mit den Wischgesten auch bei aktiviertem Screenreader bedienbar ist und die Screenreader-Stimme nicht das Audio des Spiels überlagert.

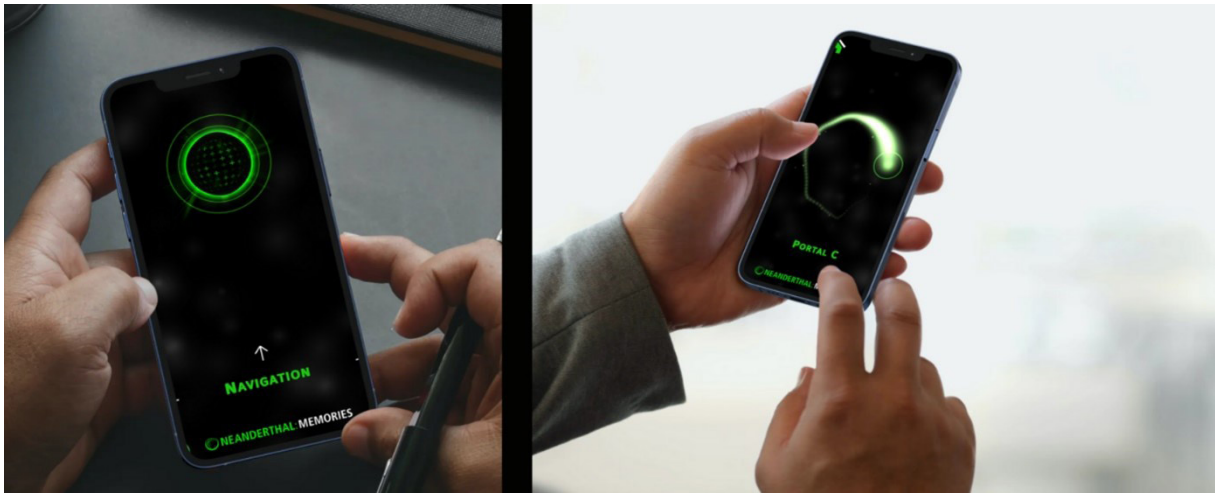

Abb. 4 Darstellung des reduzierten Screen Designs im Game (© Projekt NMsee).

Hardware & Software

Da eine sichere und unabhängige Navigation im Museumsgebäude eines der grundlegenden Anforderungen ist, muss das Game den Gästen gemeinsam mit der Infrastruktur bei der Orientierung im Haus dienen. Nach intensiver Recherche zu unterschiedlichen technischen Lösungen für barrierefreie Indoor-Navigation wurde entschieden, unter Verwendung von Beacons auditive Wegbeschreibungen entlang des Bodenleitsystems abzuspielen. Die im Game integrierte Indoor-Navigation verortet User*innen anhand des nächsten Beacons entlang des Bodenleitsystems in dem spiralförmigen Museumsgebäude und spielt dann auf Abruf eine auditive Wegbeschreibung zu verschiedenen Zielen im Museum ab, z. B. zur nächsten Spiel-Station, dem Museums-Café oder dem Eingangsbereich. Gesteuert und vorgelesen wird die Indoor-Navigation vom Spielcharakter der KI:

Beispiel: Navigation von Museumscafé zum nächstgelegenen WC
(Menüauswahl: Hauptmenü – Navigation – WC)

[KI]: „Wenn du vom Café oder dem Lift aus startest, folge dem Bodenleitsystem und der Brüstung bergab bis zum zweiten Aufmerksamkeitsfeld. Dort nach rechts abbiegen. Beim nächsten Aufmerksamkeitsfeld nochmals rechts abbiegen. Die Toiletten befinden sich zu deiner Rechten. Tast-Plan ist neben Türgriff.“

14 Das inklusive Interaktions- und Screen Design wurde von Inkl. Design GmbH, Berlin auf Faktoren wie z. B. Kontraste, Schriftart etc. geprüft.

15 Screenreader, wörtlich „Bildschirmvorleser“, sind Softwareprodukte, die Blinden und Menschen mit Sehbehinderung die Möglichkeit bieten, sich die visuell dargestellten Steuerungselemente auf dem Handy-Bildschirm vorlesen zu lassen (z. B. diverse Menüpunkte, Buttons, Apps auf dem Homescreen etc.). Zwischen den Elementen wird dann mittels Wischgesten oder per Tap navigiert.

Diese Art der Indoor-Navigation baut stark auf dem Bodenleitsystem und der spiralförmigen Architektur des Museums auf. Da im Außenbereich des Museums im Zuge des Projekts kein Bodenleitsystem eingebaut werden konnte, stehen Gästen innerhalb des Game Menüs sowie online auch auditive Wegbeschreibungen von verschiedenen ÖPNV-Stationen in Museumsnähe bis zum Eingang des Hauses zur Verfügung.

Die beschriebene Verortung von Gästen über die im Museum verteilten Beacons[16] dient neben der Indoor-Navigation auch der genauen Ansteuerung der Game-Stationen für jene User*innen, die sich nicht über visuelle Eindrücke versichern können, z. B. am richtigen Aufmerksamkeitsfeld des Leitsystems gelandet zu sein. Bei Annäherung an eine der Spielstationen empfängt das Smartphone zunächst ein vom Beacon ausgesendetes Bluetooth-Signal. Durch dieses Signal, das stets einer spezifischen Spielstation zugeordnet wird, kann in der App bereits die ungefähre Entfernung des Besuchers oder der Besucherin zur Spielstation festgestellt werden. Sind die Besucher*innen nah genug an die Spielstation herangetreten (d. h. an das taktile Exponat), startet im Game ein QR-Code-Scanner, mit dem ein taktil markierter QR-Code am jeweils ersten Schild einer Station gescannt werden kann (s. Abb. 1).[17] Mit dem Scan des QR-Codes können die Besucher*innen sicher an einer Station verortet werden, sie stehen nun unmittelbar vor dem taktilen Exponat und können dort die Story spielen.

Die Entwicklungsumgebung hinter der sichtbaren App-Oberfläche besteht dabei vereinfacht gesagt aus drei Teilen. Die *Neanderthal: Memories* App läuft:

- auf den eigenen Smartphones der Besucher*innen. Sie wurde in Unity entwickelt, einem Spieleframework, mit dem relativ unkompliziert Apps entwickelt werden können.
- Ein weiterer Teil ist das Frontend bzw. Content Management System (CMS), eine webbasierte App, mit der Mitarbeiter*innen des Museums als Administrator*innen Verwaltungsaufgaben wie das Konfigurieren der Beacons übernehmen können. Diese Website wurde in CoreUI geschrieben, einem Framework für solche grafisch webbasierten Anwendungsfälle.
- Zuletzt gibt es auch ein Backend, das Programm auf dem Server, das Inhalte bereitstellt und die Konfigurationen speichert. Die beiden erstgenannten Teile kommunizieren mit dem Backend, um ihre Funktionalitäten bereitzustellen. Das Backend wurde in PHP geschrieben.

Museum, Game Development und Menschen mit Behinderung – die Zusammenarbeit

Die erfolgreiche Entwicklung des Games *Neanderthal: Memories* war nur durch den engen Austausch zwischen Game Development, der Projektleitung und der Zielgruppe möglich. Sowohl auf Seiten des Projekts NMsee als auch auf Seiten der Entwicklung (Wegesrand GmbH und Co. KG) wurden zum Start der Zusammenarbeit im Frühjahr 2020 feste Ansprechpartner*innen definiert, die für das Projekt verantwortlich waren und im engen Kontakt miteinander standen. Wöchentliche Online-Meetings dienten zum Abgleichen des Entwicklungsstands, zur Besprechung von Änderungen und dem weiteren Vorgehen. Bei Bedarf wurden dabei verschiedene Verantwortliche aus Programmierung, Grafikdesign, Sounddesign, Ausstellungsgestaltung oder Haustechnik hinzugeholt. Für die Verwaltung gemeinsamer Projektdateien wurde auf eine Cloud-Lösung zurückgegriffen. Aufgrund der COVID-Pandemie fanden Vor-Ort-Termine im Museum (v. a. für Usability-Tests und Meilensteinabnahmen) nur in größeren zeitlichen Abständen von etwa ein bis zwei Monaten und unter Beachtung aller Sicherheitsvorkehrungen statt.

Die Aufgabenverteilung und insbesondere die Mitwirkung der Auftraggeberin gestaltete sich wie folgt: Alle wissenschaftlichen und erzählerischen Inhalte für das Game wurden von der Projektleitung in Abgleich mit dem kuratorischen Team des Neanderthal Museums bereitgestellt. Wegesrand entwickelte aus diesen Inhalten und auf Grundlage des Game-Designs von Monokel GbR das Mobile Game, d. h. die Software, welche mithilfe von Beacons und QR-Codes sowohl den Content als auch die Indoor-Navigation standortabhängig im Museum abruft. Des Weiteren war Wegesrand im späteren Projektverlauf für die Produktion der Audiofiles verantwortlich,

16 28 iBeacons der Firma Kontakt.io, davon 20 an Stationen des Games und 8 an wichtigen Navigationszielen (Toiletten, Lift, Kasse) im Museumsgebäude.

17 Menschen mit Sehbehinderung kennen ähnliche taktil markierte QR-Codes aus dem Alltag z. B. von Visitenkarten, Flyern oder auch Büchern.

die anhand der finalisierten Texte von professionellen Sprecher*innen eingesprochen wurden und die Basis für das gesamte Game bilden. Die Texte und Audiofiles waren als Kernbestandteil des Projekts ein häufiges Abstimmungsthema zwischen Wegesrand und der Projektleitung, das viele Feedbackschleifen durchlief. Darüber hinaus entwickelte Wegesrand ein CMS zur Verwaltung der Beacons, und bereitete den App-Store-Auftritt und Release des Games im iOS App Store und Google Play Store vor.

Mit feststehender Rollen- und Aufgabenteilung wurde zu Beginn der gemeinsamen Arbeit am Projekt das zugrundeliegende Game-Design, welches von 2019 bis 2020 von Monokel GbR (Köln) gestaltet wurde, weiter geschärft und ausgearbeitet, bis eine gemeinsame Basis für die weitere Spielentwicklung gefunden wurde. Wichtig war an diesem Punkt, dass der damalige Prototyp bereits das Potenzial hatte, die Ansprüche aller Beteiligten zu erfüllen. An der Schnittstelle zwischen Museums- bzw. Wissensvermittlung und Spieleentwicklung erfolgten konkretere Ausarbeitungen, wie das Wissen auf technisch umsetzbare Weise und unter Berücksichtigung der realen Vor-Ort-Gegebenheiten spielerisch vermittelt werden kann. Dabei stellten sich speziell für die Game-Entwicklung folgende Fragen: Welche Informationen soll das Game inhaltlich vermitteln? Wo werden die zu vermittelnden Inhalte innerhalb des Games am sinnvollsten platziert? Wie ordnet man sie so an, dass ein selbstbestimmtes und gleichzeitig immersives Spielerlebnis möglich ist? Wie interagieren Besucher*innen mit dem Game, wie mit den Exponaten?

Vor diesem Hintergrund begann ein iterativer Entwicklungsprozess, bei dem in mehreren Zwischenschritten aufeinander aufbauende Prototypen zur Validierung des Game-Designs und der App-Funktionalitäten erstellt wurden. Beim iterativen Arbeiten wird zunächst eine vorläufige Version des Games erstellt, die vorab definierte, grundlegende Features enthält. Die Version wird sofort mit einer Fokusgruppe von blinden und sehbehinderten Menschen getestet und auf Basis des Feedbacks weiter überarbeitet, bis eine nächste, verbesserte Version des Games erneut zum Testen bereitsteht. Diese Feedbackschleifen (Iterationen) werden so oft wiederholt, bis das gewünschte Ergebnis erreicht ist.

Jeder Prototyp wurde zum Ende einer Iteration mit einer Fokusgruppe aus blinden, sehbehinderten und sehenden Freiwilligen im Museum getestet (Abb. 5). Die freiwilligen Tester*innen wurden durch Aufrufe des Projekts NMsee über Social Media, Newsletter und andere Kontakte gefunden und zu den User*innentests eingeladen. Nachdem ein erster früher Technologietest auf Basis des Game-Design-Prototypen im Museum zeigte, dass Beacons geeignet sind, Besucher*innen zuverlässig im Museum zu verorten, wurde im Sommer 2020 ein Game-Prototyp mit den grundlegenden Funktionsbestandteilen (eine sogenannte Alpha-Version) für die ersten sechs Spielstationen entwickelt und erneut mit der Zielgruppe vor Ort im Museum getestet. Diese Alpha-Version beinhaltete bereits den grundlegenden Spielablauf und die Story für die ersten sechs Stationen, eine barrierefreie Touchgesten-Steuerung und das reduziert gestaltete, kontrastreiche User*innen-Interface. Infolge weiterer Feedback-Runden und User*innentests wurde die Story für alle Stationen von der Projektleitung verfasst und im gemeinsamen Austausch zwischen Wegesrand, dem Museum und einigen Personen aus der Fokusgruppe ausdefiniert. Die sogenannte Beta-Version, die nun die vorläufigen Inhalte für alle Spielstationen sowie alle wichtigen App-Funktionalitäten prototypisch beinhaltete, wurde im Herbst 2020 erneut mit Freiwilligen getestet. Das Feedback aus dieser Iteration wurde verwendet, um abschließend mit professionellen Sprecher*innen die finalen Sprachaufnahmen für die Audioinhalte zu produzieren und insgesamt letzte Feinheiten des Spiel- bzw. Nutzungserlebnisses zu verbessern.[18] Nach Sichtung von kurzen Beispiel-Audiosamples fiel die Entscheidung für den Sprecher*innen-Cast auf Personen, deren Stimme dem gedanklichen Bild der Spielcharaktere am besten entsprach und die vorwiegend im Theater-Bereich in der Umgebung Mönchengladbachs tätig sind.[19] So entstand bis zum Frühling 2021 die fertige Version des Games *Neanderthal: Memories*.[20]

18 Das sogenannte „Polishing“, das z. B. das Ausbessern von Fehlern im Spiel beinhaltet.

19 Wichtig war der Projektleitung hierbei, dezidiert Schauspieler*innen für das Game anzuwerben, da diese im Vergleich zu professionellen Sprecher*innen besser in der Lage sind, Emotionen allein mit der Stimme zum Ausdruck zu bringen.

20 Fertig im Sinne von: Alle App-Funktionalitäten enthalten, alle Bugs behoben.

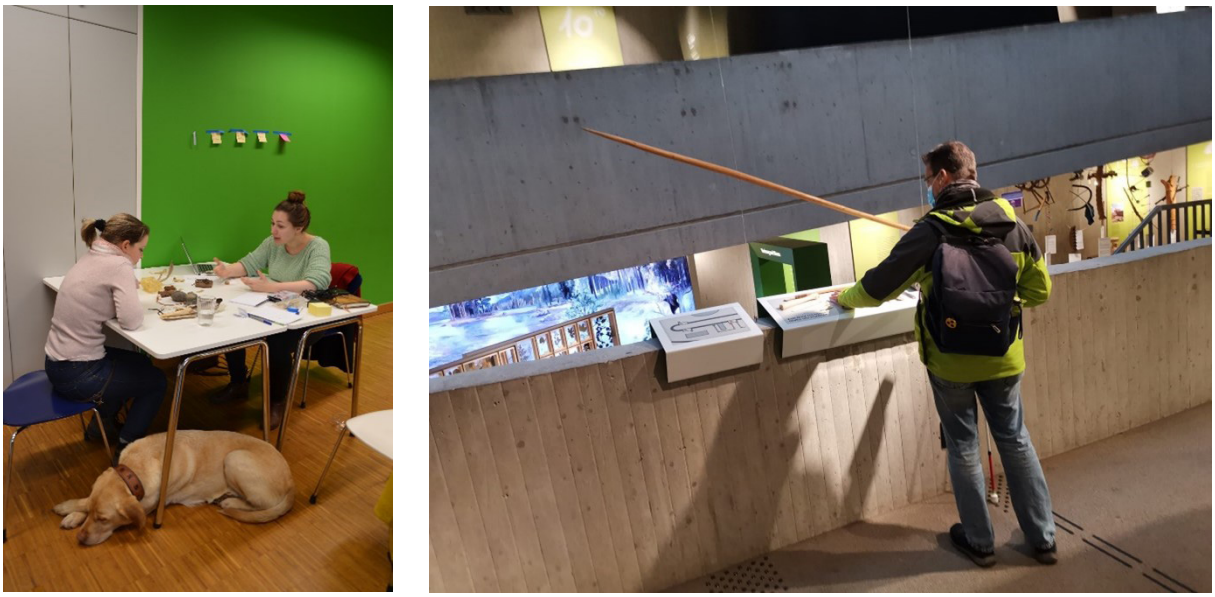

Abb. 5 Fotos aus den Usertests im Zeitraum 2019 bis 2022 (© Projekt NMsee).

In der Gesamtschau waren die User*innentests der verschiedenen Prototypen bis zur Fertigstellung des Games essenziell, um auch schon im frühen Entwicklungsstadium Lösungen für die wichtigsten Anforderungen der Zielgruppe zu finden – beispielsweise die präzise Formulierung von auditiven Inhalten und Wegbeschreibungen, die Gestaltung des User*innen-Interface oder die mit Wischgesten gesteuerte Bedienung des Games. Beim Testen der Prototypen im Museum und in den darauffolgenden, etwa 30-minütigen fragebogenbasierten Interviews wurde klar, was bereits gut funktionierte und welche Punkte nachgebessert werden mussten. Die schriftlichen Beobachtungsprotokolle und die Videoaufnahmen der Testläufe, das Feedback aus den anschließenden Interviews und dessen gemeinsame Nachbesprechung zwischen Projektleitung und Game Development ergaben für jede neue Iteration eine Liste mit ausstehenden Anpassungen und Verbesserungen. Besonders häufig wurde dabei die Navigation bzw. die User*innen-Erkennung mithilfe der Beacons getestet und verbessert, da die technische Genauigkeit eine wichtige Voraussetzung war, um blinde und sehbehinderte User*innen im Museum jederzeit sicher zu verorten. Im ständigen Dialog konnte das Game so kontinuierlich an die individuellen Bedürfnisse der Zielgruppen angepasst werden. Dabei war es im gesamten Projekt ebenso von essenzieller Bedeutung, als nichtsehbehinderte Projektleiter*innen und Entwickler*innen stets die eigenen Vorurteile und vermeintliches Wissen zu hinterfragen und das Feedback der Zielgruppe ernst zu nehmen.

Diskussion: Erinnerungen an die Steinzeit schreiben

Wie bereits erwähnt, eröffnen sich bei der Wahl eines Games als Medium für den Museumsrundgang sowie der gewählten Story mit Nami und Lemminki gleichzeitig neue Möglichkeiten als auch Fragestellungen, letztere vor allem theoretischer Natur. So können beispielsweise Nami und Lemminki glaubhaft vermitteln, was auf ihrem Speiseplan steht, was sie jagen oder welche Werkzeuge sie verwenden. Hierbei stoßen wir jedoch auf folgendes Problem: Sind uns ausreichend wissenschaftlich fundierte Quellen bekannt, um die Erinnerungen einer eiszeitlichen Frau zu schreiben? Schaffen wir uns nicht Probleme, in dem wir archäologische Forschungsergebnisse als erlebte Tatsachen vermitteln?

Ein möglicher Vergleich ist der mit der Art von Wissensvermittlung durch *Living History*, für den Vergleich nachfolgend im Sinne von verschiedenen Formen körperlichen Erlebens von Vergangenheit definiert (also beispielsweise Re-Enactment oder auch Themed Walks).[21] Im Game, welches im Falle von *Neanderthal:*

21 Siehe auch Samida 2012: 210: „Im Folgenden fasse ich Living History ganz generell als *Versuch* der aktiven Aneignung von Vergangenheit und somit als praktisches/emotionales/körperliches Erleben von Vergangenheit in der Gegenwart“. Im Sinne von „emotionales Erleben von Vergangenheit in der Gegenwart“ liegen Game und *Living History* dieser Definition nach sehr eng beieinander.

Memories eine fiktive Interaktion mit einem eiszeitlichen Charakter technisch simuliert, wird Besucher*innen – wie im Falle von *Living History* – ein Austausch mit scheinbar authentischen historischen Persönlichkeiten angeboten. In beiden Fällen können Besucher*innen fiktiven Erzählungen oder Szenen aus der Vergangenheit lauschen oder mit den Charakteren in Dialog treten. In beiden Fällen wird – für Lai*innen einfach nachvollziehbar – ein im Idealfall wissenschaftlich belegbarer Wissensstand dargestellt.[22] Mitglieder von z. B. Re-Enactment-Gruppen legen einen fiktiven Charakter an, schaffen eine eigene Biografie für diesen und treten bei Veranstaltungen als dieser fiktive Charakter auf.[23]

Während im Fall von *Living History* die vermittelnden, realen Personen diesen Wissensstand praktisch „*live*" – entweder auf Basis von eingespielten Szenen, Improvisation oder in direkter Reaktion auf Fragen und Aussagen von Besucher*innen – erstellen, wird im Game eine geplante Abfolge von vordefinierten, mehrfach lektorierten Texten wiedergegeben; die „Menschlichkeit" des Spielcharakters, seine/ihre emotionalen Reaktionen und die zwischenmenschliche Interaktion sind, im Gegensatz zu Interaktion mit dem „Charakter" am Mittelaltermarkt, reine Simulation. Je feiner die Verzweigungen der zugrunde liegenden Branching Narrative sind, desto „authentischer" wird oft auch die Interaktion mit den Charakteren empfunden. Trotzdem bleiben Games auf dem heutigen Stand der Technik im besten Fall eine sehr echt wirkende Simulation von zwischenmenschlichem Austausch. Wir sollten auch hinterfragen, ob wir bei der Gestaltung und Entwicklung von Games zur Wissensvermittlung überhaupt versuchen sollten, die emotionale Qualität des zwischenmenschlichen Gesprächs – die große Stärke von persönlicher Bildung und Vermittlung im Museum! – in interaktiven digitalen Medien wie Games nachzuempfinden. Mit den derzeit den Museen oder Universitäten zur Verfügung stehenden technischen Mitteln ist letzteres nicht zufriedenstellend möglich. Diese Tatsache macht einerseits eine große Schwäche bei der Gestaltung von Games-basierten Museumsangeboten aus; andererseits bedeutet sie auch, dass wir Games und auf ihnen basierte Wissensangebote anders behandeln müssen als die Darstellung und das Erleben von Geschichte in Form von *Living History*. Games – zumindest im Falle von *Neanderthal: Memories* – sind unserer Ansicht nach eine interaktivere und emotionalere Form der Wissenschaftskommunikation als Text, auditive sowie (im Falle anderer, nicht auf inklusives Gameplay spezialisierter Titel) visuelle Eindrücke, wie sie seit Jahrzehnten im Museumsbereich eingesetzt werden. Beim Anbieten eines Games mit archäologischen Inhalten ändern wir als Wissenschaftler*innen oder Museumsmitarbeiter*innen nur leicht unsere Rolle im Austausch mit unseren Besucher*innen: Zwar geben wir im Namen der Interaktivität einen kleinen Teil unserer Entscheidungsmacht über Art und Weise des Erlebnis unserer Besucher*innen ab, indem wir ihnen die Wahl lassen, wie die Charaktere was erzählen, und in welche Richtung sich die Story entwickelt. Auch wenn dies in Hinblick auf ältere Forderungen nach einer offeneren, weniger unidirektionalen Kommunikation mit dem Publikum als Fortschritt gewertet werden kann, sollten wir dabei nicht der Illusion erliegen, dass es sich hierbei bereits um wirklichen Austausch mit den Besucher*innen handelt. Das Museum oder die Universität behält weiterhin die uneingeschränkte Autor*innenschaft der erzählten Story. Durch die Wahl des Mediums Game wird Besucher*innen darin ein unterschiedlich großer Spielraum gewährt; jedoch können keine eigenen Meinungen oder (in Abwesenheit von z. B. einem Chatbot) eigene, frei formulierte Fragen eingebracht werden. Dies kann von Seiten der Forschung sowohl als positiv gewertet werden, da man die volle Kontrolle über die vermittelten Inhalte behält; aber auch als negativ, da es an echter Interaktion mit Besucher*innen weiterhin mangelt.

Letztere Aussage möchten wir nachfolgend durch die Darstellung des „Produktionsprozesses" eines Game-Dialogs und den Vergleich der Wissensvermittlung über das Game *Neanderthal: Memories* mit dem Audio-Guide des Neanderthal Museums und den parallel ausgestellten Panel-Texten veranschaulichen.

22 Vgl. Samida und Liburkina 2014: 194. Das bedeutet nicht, dass alle Darsteller*innen von Re-Enactment-Gruppen diese Tätigkeit immer mit dem Motiv der Wissensvermittlung ausüben. Es gibt viele weitere Motivationsgründe, wie z. B. das Treffen von Gleichgesinnten oder das Interesse am Experimentieren, von denen pro Darsteller*in mehrere zutreffen können.

23 Fraglich ist jedoch, wie sehr die Gruppenmitglieder bei den Veranstaltungen „in der Rolle" bleiben; wie genau man sich an die vorgefertigten Biografien auf Basis der recherchierten Forschungsergebnisse hält; wie exakt eine Trennung zwischen persönlichem Empfinden und Meinung versus den wissenschaftlich belegbaren, vorab recherchierten „Biografien" möglich ist.

	Ausstellungstext (gelesen)	Audio-Guide-Text (gehört)	Game-Text (gehört)
*Für Besucher*in jederzeit les-/ hörbar bzw. automatisch abgespiel*t	**„3.5. Begegnungen“** (…) In Asien und Europa trafen wir dabei auf entfernte Verwandte wie die Neanderhaler und Denisova-Menschen, Nachfahren früherer Auswanderer aus Afrika. In Europa kamen wir vor etwa 40 000 Jahren an. Wir lebten als eiszeitliche Jäger und Sammler, genau wie die Neandertaler. Deren Zahl war durch den ständigen Wechsel von wärmeren und sehr kalten Klimaphasen bereits stark zurückgegangen. Unser Erbgut verrät zwar, dass wir uns mit ihnen auch vermischt haben, aber viele Regionen waren so dünn besiedelt, dass wir uns nicht immer begegnet sind. (…)	**„Rekonstruktion Pestera cu Oase“** (…) „Als ich 2002 in der Pestera-cu-Höhle in Rumänien entdeckt wurde, ahnten die Forscher schon bei der ersten Untersuchung meines Schädels, dass ich etwas Besonderes bin. Sie stellten fest, dass ich typische Merkmale von Homo sapiens habe, wie etwa meinen grazilen Hirnschädel, aber auch Merkmale von Neandertalern, wie mein großes Gesicht und meine massiven Zähne. Sie wollten es aber ganz genau wissen und untersuchten mehr als zehn Jahre später auch meine DNA. Sie lieferte den Beweis: ich habe einen Anteil von 9% Neandertalergenen in mir – deutlich mehr als die 4%, die alle anderen Europäer in sich tragen. Was für eine Überraschung!“ (…)	**„Portal E“** (...) [Nami] „Nein Lemminki, nicht jedes Treffen mit Andersartigen läuft auf ein Blutvergießen hinaus. Ich glaube, wir haben uns vielmehr… vermischt, wenn du weißt, was ich meine… *kichert anzüglich*. Was man an dir übrigens gut erkennen kann!“ [Lemminki] *misstrauisch* „Was meinst du damit?“ [Nami] „Eine flache Stirn, wenig Kinn, große Nasen… Ich kenne einige Jägerinnen und Sammler hier in der Steppe, die den Ältesten noch sehr ähneln.“ [Lemminki] *unsicher* „Ooookay...Ich nehm das mal als das Kompliment, das es sein könnte…“ [Nami] *liebevoll* „Klar, mein Hübscher!“ (…)
Nach Auswahl im Game les-/ hörbar	---	---	**„Weitere Infos vom Team“** [Museumsmitarbeiterin] „Du selbst, du trägst bis zu 2,6% Neanderthal-DNA in dir! Hättest du das gedacht? Woher wissen wir das eigentlich? Forscherinnen und Forscher können heute dank der sogenannten aDNA-Forschung sogar die stark fragmentierte, also die beschädigte, DNA von lange verstorbenen Lebewesen analysieren. Aus fossilen Knochen werden dann im Labor Proben herausgeschnitten, und diese dann zu einem Pulver gemahlen. Und aus diesem uralten Knochenpulver – zum Beispiel eben unseres Mr. N – können dann Reste von DNA chemisch extrahiert werden. Dabei handelt es sich nur um ganz winzige Mengen Steinzeit-DNA… Diese DNA-Bruchstücke werden im Anschluss vervielfältigt und mit der modernen DNA verglichen. Durch die Entschlüsselung der Genome von Neandertalern und modernen Menschen und deren Vergleich haben wir in den letzten Jahren ganz viel nachweisen können, zum Beispiel wissen wir, dass sich der anatomisch moderne Mensch, also wir, und die Neandertaler vor gar nicht allzu langer Zeit gekreuzt haben, also Nachkommen miteinander bekommen haben. (…)

Tab. 1 Vergleich unterschiedlicher musealer Texte.

Wie bereits in den vorigen Abschnitten dieses Textes beschrieben, erfolgte im Falle von *Neanderthal: Memories* die Textproduktion für das Game innerhalb des Museums. Die Produktion aller Texte im Game lief ähnlich, wenn nicht gleich, wie die Produktion eines klassischen Ausstellungstextes, eines populärwissenschaftlichen Buches oder eines Audio-Guides ab. Im Vergleich zum oben genannten Beispiel der Interaktion mit einer Re-Enactment-Darstellerin kann Nami nicht von dem vom Museum lektorierten Text abweichen oder „aus der Rolle fallen"; sofern dies nicht gezielt im Game Development so eingebaut wurde. Um diese Ähnlichkeit mit anderen musealen Texten zu illustrieren, legen wir nachfolgend einen Vergleich von drei unterschiedlichen Texten vor, welche in der Dauerausstellung des Neanderthal Museums dazu genutzt werden, die Information „Neandertaler & Moderner Mensch" zu vermitteln (Tabelle 1).

Tab. 1 visualisiert Unterschiede zwischen verschiedenen musealen Texten. Diese weichen beispielsweise in ihrer Erzählperspektive, der Wahl von direkter/indirekter Rede oder dem Fokus auf Details aus dem gemeinsamen Themenbereich voneinander ab.[24] Was unverändert bleibt, ist die Art und Weise, wie der Text (siehe oben) Wissen zur Verfügung stellt: in Form von seitens des Museums geschriebenem und lektoriertem Text, der gelesen oder gehört wird. Wichtig ist, dass diese Art Text ebenso wie Ausstellungspaneele oder Audio-Guide-Dateien von Seiten des Museums regelmäßig auf ihre Aktualität geprüft und gegebenenfalls aktualisiert werden. Insofern ist es auch wichtig, bei der Entwicklung von Games für die Wissensvermittlung auf die langfristige „Pflegbarkeit" zu achten: im Falle von *Neanderthal: Memories* können beispielsweise Audio-Einheiten gekürzt oder ausgetauscht werden, ohne dabei die Software verändern oder neu entwickeln zu müssen. Nur so kann das Museum für all seine Inhalte – unabhängig ob Ausstellungstext, Audio Guide oder Game – die notwendige wissenschaftliche Fundierung garantieren. Diese Aufgabe fällt beispielsweise bei *Neanderthal: Memories* der Abteilung Ausstellungsmanagement des Neanderthal Museums zu, die regelmäßig die Inhalte der Dauerausstellung auf ihre Aktualität hin evaluiert und anpasst.

Zusammenfassung

Neanderthal: Memories wurde als inklusiver Zugang zu einer archäologischen Ausstellung für und mit Menschen mit Sehbehinderung geschaffen. Das Game wurde partizipativ in Form von sechs Iterationen entwickelt, wobei in jeder Iteration ein Prototyp mit Freiwilligen mit und ohne Sehbehinderung getestet wurde. Die Story wurde in Abgleich mit dem Team des Museums geschrieben und greift die Hauptthemen der Dauerausstellung des Neanderthal Museums auf. Dabei nutzt das Game bewusst interaktive Storytelling-Strukturen, um die wissenschaftlich fundierte Erzählung, welche bereits in der Ausstellung vermittelt wird, verstärkt zu kommunizieren.

Auch muss bei der Entwicklung von Games zur Wissensvermittlung beachtet werden, dass ihre Inhalte regelmäßig auf ihre Aktualität überprüft und gegebenenfalls angepasst werden, ähnlich dem Vorgehen bei anderen Elementen der Ausstellung. Daher muss bei der Entwicklung des Games bedacht werden, dass einzelne Informationen auch nach Abschluss und Veröffentlichung des Games ausgetauscht oder verändert werden können.

Die Entwicklung eines Mobile Games für eine blinde und sehbehinderte Zielgruppe zeigte besondere Herausforderungen auf, die im Arbeitsalltag (leider) selten eine so zentrale Rolle einnehmen. So ist die Einbeziehung von blinden und sehbehinderten Tester*innen von Anfang an sehr wichtig und lohnend, damit deren Feedback im Prozess berücksichtigt werden kann und die grafischen, textlichen sowie technischen Anforderungen bestmöglich erfüllt werden können. Eigene Vorurteile und vermeintliches Wissen in Bezug auf diese Zielgruppe müssen abgelegt werden. Mit Projektende im Frühjahr 2022 wurde eine abschließende Publikation vom BSVN e.V. veröffentlicht, in welcher die Arbeits- und Lernprozesse aus dem Projekt im Detail erläutert werden.[25]

24 Ziel des Neanderthal Museums ist es, Besucher*innen ein möglichst vielseitig und individuell wählbares Bildungsangebot zu liefern; deshalb auch die Varianz zwischen den verschiedenen Texten.

25 Der Abschluss der begleitenden Promotion der Projektleitung auf Basis der Evaluierungen im Projekt ist aktuell für 2022 geplant.

Danksagung

Das Projekt NMsee und das Game *Neanderthal: Memories* wären ohne den engagierten Einsatz der freiwilligen Tester*innen und der Berater*innen vom BSV Mettmann e.V. nicht möglich gewesen. Wir bedanken uns herzlich für ihre Unterstützung.

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The Problem of Assessing Intervertebral Disc Disease as Impairment and Disability in Bioarchaeology. The Case of a Male Individual from the Late Medieval and Early Modern Period in Łekno, Poland

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The Problem of Assessing Intervertebral Disc Disease as Impairment and Disability in Bioarchaeology. The Case of a Male Individual from the Late Medieval and Early Modern Period in Łekno, Poland

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Abstract

Joint disease is one of the most common bone changes identified in skeletal populations. This paper presents a methodological discussion of the medical and bioarchaeological grading systems for describing intervertebral disc disease (IDD). A comparison of the bioarchaeological and medical grading systems helps to estimate the impact of IDD in the spine on the functioning of an individual and potential disability. The case study is focused on a male from the 14th to 16th centuries CE (late medieval and early modern period) who was buried in Łekno, Poland. The cemetery in the Łekno settlement complex consists of approximately 400 burials of Cistercian monks and local people. The individual was buried in the same body position and orientation as contemporaries. Analysis of the lesions in specimen indicate mild, moderate and severe IDD, classified as grades 1 to 3 on the Bioarchaeological Intervertebral Disc Disease Grading System. Moreover, the analysis indicated osteoarthritis, possibly early stage of DISH and healed and stable fracture of the left clavicle. Archaeological context and texts were used to evaluate the possibility that this individual was disabled. The spinal disease might have caused limitations of flexibility and temporal and chronic pain. This would become more evident as the age of the individual progressed. The individual could be regarded as sick and temporarily unable to work, thus needing help and healing. Due to his challenging conditions, it seems that he was cared for and supported by family, other people from the village and/or the Cistercian Order.

Keywords

spinal disease, disability, palaeopathology, history, Cistercian Order

Zusammenfassung

Gelenkerkrankungen sind eine der häufigsten Knochenveränderungen, die in Skelettpopulationen festgestellt werden. In diesem Beitrag wird eine methodische Diskussion der medizinischen und bioarchäologischen Klassifizierungssysteme zur Beschreibung von Bandscheibenerkrankungen (*Intervertebral Disc Disease* – IDD) vorgestellt. Ein Vergleich der bioarchäologischen und medizinischen Einstufungssysteme hilft, die Auswirkungen von IDD in der Wirbelsäule auf die Funktionsfähigkeit einer Person und eine mögliche Behinderung abzuschätzen. Die Fallstudie konzentriert sich auf einen Mann aus dem 14. bis 16. Jahrhundert u. Z. (Spätmittelalter und frühe Neuzeit), der in Łekno, Polen, bestattet wurde. Der Friedhof im Siedlungskomplex von Łekno besteht aus etwa 400 Gräbern von Zisterziensermönchen und Einheimischen. Das Individuum wurde in der gleichen Körperposition und -ausrichtung wie seine Zeitgenossen bestattet. Die Analyse der Läsionen in der Probe deutet auf eine leichte, mittelschwere und schwere Bandscheibenerkrankung hin, die nach dem bioarchäologischen Klassifizierungssystem für Bandscheibenerkrankungen als Grad 1 bis 3 eingestuft werden. Darüber hinaus deutet die Analyse auf Arthrose, möglicherweise ein frühes Stadium von diffuser idiopathischer Skeletthyperostose (DISH) und eine verheilte und stabile Fraktur des linken Schlüsselbeins hin. Zur Beurteilung der Möglichkeit einer Behinderung wurden archäologische und schriftliche Quellen herangezogen. Die Wirbelsäulenerkrankung könnte zu Einschränkungen der Beweglichkeit und zu vorübergehenden und chronischen Schmerzen geführt haben. Dies würde mit zunehmendem Alter des Individuums deutlicher werden. Die Person könnte als krank und vorübergehend arbeitsunfähig betrachtet werden, so dass sie Hilfe und Heilung benötigte. Aufgrund ihres schwierigen Zustands wurde sie anscheinend von der Familie, anderen Personen aus dem Dorf und/oder dem Zisterzienserorden gepflegt und unterstützt.

Schlagwörter

Wirbelsäulenerkrankung, Behinderung, Paläopathologie, Geschichte, Zisterzienserorden

Introduction

Many definitions and three main models of disability were developed over the past decades. The medical model recognizes that it is physical or mental limitations that cause disability (Barnes and Mercer 2010). On the other hand, the social model recognizes that there are social expectations of the “able-bodied” in society that affect the lifestyle of an individual. The “able-bodied” members of a society create social, cultural, legal, or political barriers that prevent people with impairments from fully participating in society. It is these barriers that cause disability. In turn, the multifactorial or mixed model reconciles medical and social dimensions of disability (Beaudry 2020). It indicates that disability is the result of many factors (individual and environmental) and covers different dimensions of disability under one definition. A well-known example of a multifactorial model is the WHO biopsychosocial model, in which “disability and functioning are viewed as outcomes of interactions between health conditions (diseases, disorders and injuries) and contextual factors (environment and personal factors)” (WHO 2002: 10).

Bioarchaeological studies reflect these models. In the early years, the medical model anchored bioarchaeological studies that assessed disability based only on pathological changes visible on bone (e.g., Trinkaus 1983; Spoor et al. 1998; Murphy 2000). Some recent research continues to adopt this approach (e.g., Conlogue et al. 2017). In the last years, however, researchers have been moving towards a socio-cultural definition of disability and considerations of identity (e.g., Boutin 2016; Lovell 2016; Cormier and Buikstra 2017). It is emphasized that disability is a socio-biological condition resulting from the attitude of society towards a person with impairment (e.g., Dettwyler 1991; Finlay 1999; Zakrzewski 2014; Tilley 2015; Boutin 2016). Bioarchaeologists agree that the recognition of disability depends on cultural contexts and social norms. The Bioarchaeology of Care paradigm fits into the multifactorial model of disability and defines disabled as individuals having significant physical impairments that prevented them from meeting social demands fully and therefore needed care to survive (Tilley 2015; Tilley and Schrenk 2017). We agree that, especially in bioarchaeology, which examines the physical dimension of impairment, the biological factor of disability is essential. The archaeological context and the attitudes of contemporary people must be considered as well in the (re)construction of the disability experience. Therefore, the multifactorial model seems to be the most appropriate for bioarchaeological research because it considers physical impairment relative to social expectations in the past.

There are currently between one billion people (~ 15%) with disabilities worldwide (The World Bank 2021a), which is a significant part of the society. Lower back pain (LBP) due to spinal diseases is one of the most common forms of disability in Western society with a high economic burden (e.g., loss of income, medical costs) and a major impact on wellbeing (i.e. decreased quality of life) (Raastad et al. 2015; see also Candotti et al. 2015; Plomp 2017). Only after World War Two was LBP recognized as a disability, and today it is a global scale problem (Allan and Waddell 1989). However, its history is much longer, going back to ancient times. LBP was recognized in ancient Egypt, as evidenced by the Edwin Smith papyrus (ca. 1500 BC, Allan and Waddell 1989). Galen of Pergamon (ca. 150 AD) and his disciples defined back pain as symptomatic of many illnesses and also as one of the pains that affected joints and muscles. In later times, however, infectious diseases, plagues, malnutrition, and high mortality were bigger health problems for short-lived societies than LBP (Allan and Waddell 1989). It was only during the construction of the railroad and during the industrial revolution in the 19th century that heavy physical work caused the LBP to grow on a massive scale. The first compensation and lawsuits for work injuries appeared at that time (Allan and Waddell 1989). The main cause of LBP from the 19th century is unknown, but it might be assumed that one of the reasons was spinal joint disease.

Spinal joint diseases such as osteoarthritis and spondylosis are frequently observed in archaeological populations (Rogers and Waldron 1995; Waldron 2012; Yustos et al. 2021). Spondylosis, degenerative or intervertebral disc disease, also known as intervertebral osteochondrosis and vertebral osteophytosis, is a degenerative condition of the disc and vertebral bodies (Plomp 2017; Kinkopf et al. 2021). The intervertebral disc is a component of a spinal "motion segment" that includes the facet joints. Intervertebral disc disease (IDD) is a distinct but functionally related condition to facet joints osteoarthritis (Gellhorn, Katz and Suri 2013). IDD is characterized by marginal osteophytes of the vertebral bodies, coarse pitting, and new bone growth on the superior and inferior surfaces of the vertebral bodies (Waldron 2009; Burt et al. 2013). IDD is most frequently found in lower cervical, upper thoracic and lower lumbar sections of the spine. Schmorl's nodes are frequently associated with IDD and are recognized as depressions on the upper or lower surfaces of the vertebral bodies (Rogers 2000). They are most common in the lower thoracic and lumbar regions (Waldron 2009).

Archaeological studies focus on the description of joint disease prevalence in the past populations, e.g., spondylosis in the cervical spine in individuals from medieval Germany (Weber et al. 2003). Some studies present methodological approaches to degenerative joint disease (DJD); for example, Yustos et al. (2021) analysed DJD in spines including IDD from comingled remains. There are also studies that focus on biocultural approaches to DJD. For instance, Sofaer Derevenski (2000) discussed whether gendered division of labour had an impact on sex differences in the distribution of osteophytosis of the vertebral bodies and vertebral DJD in medieval Wharram Percy (England) and modern Ensay (Scotland). Kinkopf et al. (2021) investigated whether economic access influenced vertebral osteophytosis and vertebral osteoarthritis at rural late medieval Villamagna in Italy. Plomp (2017) adopted a theoretical approach in discussing how pathological changes causing back pain may have led to disability without, however, presenting case studies. There is a need to take the next step forward and move beyond the description of DJD and IDD of the spine to investigating the problem of its impact on disability and quality of life. Domett et al. (2017) presented the impact of osteoarthritis in peripheral joints on quality of life and disability using materials from prehistoric Thailand. However, there is a need to conduct such studies for spinal DJD including IDD. This article aims to (re)construct the impact of spinal disease with special emphasis on IDD on the quality of life and possible impairment or disability of an individual from medieval and early modern Poland.

There are bioarchaeological grading systems for osteophytosis of vertebral bodies (Sofaer Derevenski 2000; Weber et al. 2003; Kinkopf et al. 2021; Yustos et al. 2021), but none have been compared to medical grading systems in assessing the impact of lesions on quality of life and disability. Medical studies link grades of spinal disc disease to chronic pain and disability. If we compare the bioarchaeological grading system for disc disease of the spine with the medical grading system, we gain insights into which disc disease grades visible on the bones may have led to pain and contributed towards disability in the past.

This article has several goals: 1) a methodological discussion of the medical and bioarchaeological grading systems for describing IDD in the spine; 2) a comparison of the bioarchaeological and medical grading systems to estimate the impact of IDD in the spine on the functioning of an individual and potential disability; 3) presentation of how IDD in the spine could have an impact on the life of an individual from the late medieval and early modern periods in Poland; 4) addressing through contemporary medieval and early modern Polish literature whether back pain was recognized as an impairment or disability in Poland at that time. This article is deeply grounded in palaeopathological, medical, archaeological and historical research, and thus has both an interdisciplinary and

biohumanistic dimension. This study has value for archaeological research because it moves beyond palaeopathological description and facilitates an understanding of its potential impact on past human lives from the perspective of those societies in which individuals lived rather than imposing modern perceptions of what constituted disability in the past.

Methods

Age and Sex Estimation, Stature

Biological sex was estimated by examining the morphological characteristics of the pelvis and cranial morphology (Phenice 1969; Buikstra and Ubelaker 1994; Klales et al. 2012). Age-at-death was estimated by assessing morphology of the pubic symphysis, auricular surface and cranial sutures using Transition Analysis 2 (Boldsen et al. 2002). Palaeopathological analysis followed Buikstra and Ubelaker (1994). Stature was estimated using the Breitinger method (1937).

The Bioarchaeological Intervertebral Disc Disease Grading System

In the case of the spine, degenerative changes include both the diarthrodial and the amphiarthrodial joints. The last-mentioned involves intervertebral disc degeneration, which is characterized radiologically by the presence of osteophytes, endplate sclerosis, and disc space narrowing. In clinical studies disc space narrowing is the most frequently investigated radiographic feature, while osteophytes and end plate sclerosis are least often studied (Raastad et al. 2015). In archaeological investigations osteophytes and pitting on the inferior or superior surface of the vertebral bodies are most commonly examined to assess IDD (Waldron 2009). Disc space narrowing cannot be observed in osteological material, and thus it cannot be investigated in archaeology. This presents a disadvantage in a palaeopathological study.

Osteophytes are formation of bony spurs of initial horizontal orientation extending from vertebral bodies. Horizontally oriented osteophytes develop on the anterior margin of the vertebral body to stabilize the compromised disc joint. The development of vertebral osteophytes is related to age, sex and physical activity. Intervertebral disc degeneration involves changes in “disc composition and biochemistry, as well as accumulated tissue damage due to multiple age progressive stressors, including avascularity resulting in oxidative injure, high magnitude mechanical compression at high frequencies or for prolonged duration, and depleted cellular waste disposal due to acidic, hypertonic, and/or oxidative joint microenvironment” (Kinkopf et al. 2021: 501). Research suggests “there is a complex series of cellular mechanisms central to a cycle of phenotypic change in the disc and centra, affecting and affected by the amplification of inflammatory pathways and sensitization via neutrophils and other inflammatory mediators […]. The initiation of degenerative changes in the spine likely occurs due to a combination of these stressors and progresses in a positive feedback system” (Kinkopf et al. 2021: 501). Severe cases are marked by vertically oriented osteophytes, which may articulate or fuse to form a bony bridge with adjacent disc. Osteophytosis “tends to produce ‘shelf-like’ protrusions and irregular or undulating fusion” (Buikstra and Ubelaker 1994: 121).

Clinically, many classifications and grading systems have been developed that define the advancement of degenerative changes, depending on the deformation of the anatomical structures of the affected joint. Among all available grading systems based on macroscopic anatomy, plain radiography, histology, magnetic resonance, discography imaging, those concerning plain radiography and magnetic resonance imaging

(MRI) are the most useful for bioarchaeologists because they estimate the size of osteophytes, as in bioarchaeological grading systems. Because clinicians investigate living people and do not have direct access to bones, the grading systems used in medicine have been designed to assess X-ray images, while the grading systems used in palaeopathology are oriented to a greater extent for direct examination. Currently, a frequently used grading system in medicine is the one proposed by Pfirrmann et al. (see Kettler and Wilke 2006); however, it is based on MRI signal intensity, disc structure, distinction between the nucleus and anulus, and disc height. Since soft tissues do not preserve, it is impossible to observe them in osteological materials and therefore it cannot be used accurately in bioarchaeological research.

Kettler and Wilke (2006) described 42 medical grading systems for the description of degenerative changes in the cervical and lumbar spine. They argue that the grading system proposed by Kellgren et al. (1963), which is based on radiography, is regarded as the best for assessing cervical disc degeneration because it has interobserver reliability as indicated by the Kappa Coefficient 0.71 (Kettler and Wilke 2006). It includes four grades of osteophytes, disc space narrowing and sclerosis expression (Table 1). We developed the Bioarchaeological Intervertebral Disc Disease Grading System (Table 1) and compared it with the medical grading system to estimate the degree of expression of IDD and its impact on the functioning of an individual. The Bioarchaeological Intervertebral Disc Disease Grading System (BIDDGS) elaborates on the grading system for osteophyte expression from the *Standards* by Buikstra and Ubelaker (1994). The osteophytes in the *Standards* (1994) have four degrees of expression: barely discernible, elevated ring, curved spicules and fusion present. The BIDDGS, which is used to describe the cervical vertebrae section of the spine, has five grades (grade 0 to 4) of osteophyte expression (Table 1; Fig. 1). In each case, we record the location of each lesion. The medical grading system by Kellgren et al. (1963) and the BIDDGS correspond as follows (Table 1). Kellgren et al. (1963) do not grade lack of lesions (grade 0 in BIDDGS). Grade 1 in both grading systems is comparable. Grades 2 and 3 for osteophytes according to Kellgren et al. (1963) may correspond to BIDDGS grade 2. Grade 4 according to Kellgren et al. (1963) corresponds to BIDDGS grade 3. Kellgren et al. (1963) do not distinguish ankylosis (BIDDGS grade 4). For a better comparability of the evaluation of the degree of osteophytosis, we defined grade 1 as a mild form, grade 2 as a moderate form and grades 3 and 4 as severe forms.

Kellgren et al. (1963) grading system		**Bioarchaeological Intervertebral Disc Disease Grading System (BIDDGS)**		
Grades	**Lesions**	**Grades**	**Osteophyte degree**	
		0	None	None
1	Minimal anterior osteophytosis	1	Barely discernible	Mild
2	Definite anterior osteophytosis with possible narrowing of the disc space and some sclerosis of vertebral plates	1	Sharp ridge, slight spicules extending horizontally	Moderate
3	Moderate narrowing of the disc space with definite sclerosis of vertebral plates and osteophytosis			
4	Severe narrowing of the disc space with sclerosis of vertebral plates and multiple large osteophytes	3	Extensive spicular formation	Severe
		4	Ankylosis	Severe

Table 1. Comparison of Kellgren et al. (1963) grading system with the Bioarchaeological Intervertebral Disc Disease Grading System (BIDDGS) for the cervical vertebrae.

Osteophytes are the most frequently observed radiological lumbar disc degenerative feature (de Schepper et al. 2010; Raastad et al. 2015). The medical grading system for describing thoracic and lumbar vertebral disc degeneration follows Lane et al. (1993; see Kettler and Wilke 2006). It is the most recommended among clinical grading systems because the only material needed are radiographs and it has a clear structure that can be very easily applied (Kettler and Wilke 2006). This grading provides a method for assessing the presence and severity of radiographic features (Table 2). Joint space narrowing, anterior and posterior osteophyte formation, and subchondral sclerosis should be assessed individually. Then, an overall grading is given from 0 to 2 (see Kettler and Wilke 2006):

Grade 0 = Normal joint (0 for osteophytes and narrowing)

Grade 1 = Mild (1) narrowing or mild (1) osteophytes

Grade 2 = Moderate-severe (2–3) narrowing and/or moderate-severe (2–3) osteophytes

The BIDDGS has the same grades for the thoracic and lumbar regions of the spine as for the cervical region. For the thoracic and lumbar regions, the medical grading system by Lane et al. (1993) and the BIDDGS compare as follows (Table 2). Grades 0 to 3 for osteophytes by Lane et al. (1993) correspond with BIDDGS grades 0 to 3 for osteophytes. The BIDDGS grade 4 describes ankylosis, which is identified in osteological material. The grading system by Lane et al. (1993) does not include ankylosis. For a better comparability of the evaluation of the degree of osteophytosis, we defined grade 1 as a mild form, grade 2 as a moderate form and grades 3 and 4 as severe forms (Fig. 1). It is impossible to investigate disc space narrowing in osteological material. For this reason, here, as in the cervical spine, the BIDDGS does not record joint space narrowing. This is contrary to medical grading system by Lane et al. (1993) that assesses disc space narrowing based on radiography.

Lane et al. (1993) grading system				**Bioarchaeological Intervertebral Disc Disease Grading System (BIDDGS)**		
Grades	**Joint space narrowing**	**Osteophytes anterior and posterior**	**Sclerosis**	**Grades**	**Osteophyte degree**	
0	None	None	None	0	None	None
1	Definite (mild) narrowing	Small	Present	1	Barely discernible	Mild
2	Moderate	Moderate	-	2	Sharp ridge, slight spicules extending horizontally	Moderate
3	Severe (complete loss of joint space)	Large	-	3	Extensive spicular formation	Severe
				4	Ankylosis	Severe

Table 2. The comparison of the Lane et al. (1993) grading system with the Bioarchaeological Intervertebral Disc Disease Grading System (BIDDGS) for the thoracic and lumbar vertebrae.

The BIDDGS has a compatible grading system with the medical grading system for thoracic and lumbar sections of the spine (Lane et al. 1993). The Kellgren et al. (1963) grading system for the cervical section of the spine is less in line with the BIDDGS in terms of described degrees of degenerative changes.

There is a less detailed, three-grade scale (Weber et al. 2003) for IDD than the BIDDGS. Sofaer Derevenski (2000) uses five-graded scale for IDD. Yustos et al. (2021) distinguish five degrees of osteophytes: 0 – not present, 1 – slight, 2 – moderate, 3 – bony spurs, 4 – ankylosis, that are similar to those from the BIDDGS, because they also refer to the *Standards* (Buikstra and Ubelaker 1994). Kinkopf et al. (2021) have presented an elaborated scale with seven scores. However, for the purpose of statistical analyses, the seven scores were combined into “low severity” and “high severity”. The BIDDGS presents a moderate number of degrees of lesion expression which is feasible for qualitative and quantitative (statistical) analyses. Moreover, the advantage of the BIDDGS is that it corresponds with the clinical medical grading system (Lane et al. 1993) for the assessment of thoracic and lumbar IDD, which allows easy comparison and assessment of the impact of lesions on the experience of pain and quality of life of an individual. We discuss this issue below.

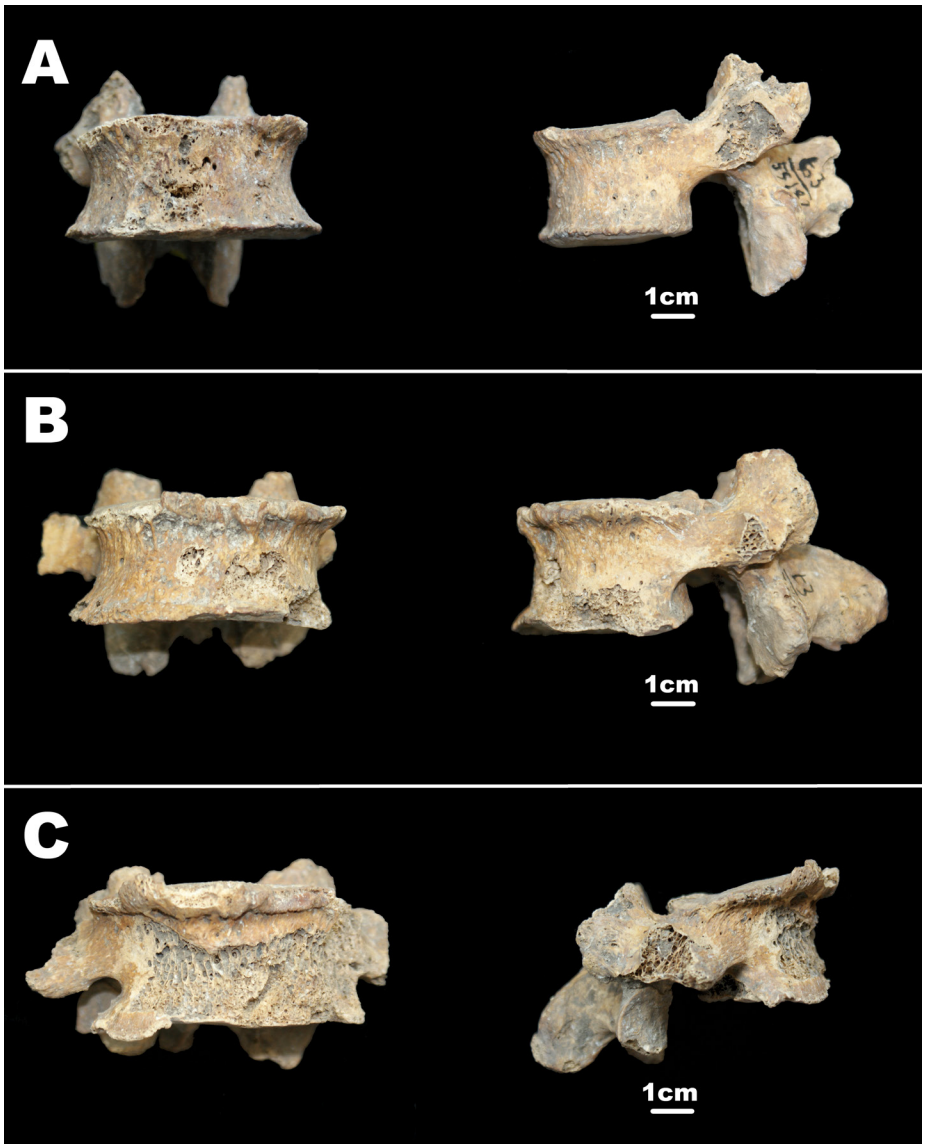

Fig. 1. Intervertebral disc disease grades based on the Bioarchaeological Intervertebral Disc Disease Grading System (BIDDGS). A – barely discernible osteophytes observed in a lumbar vertebra (grade 1). B – sharp ridge, slight spicules of osteophytes extending horizontally on the anterior and left superior aspect of the body of a lumbar vertebra (grade 2). C – extensive spicular osteophyte formation observed on the right superior and the inferior aspects of the body of a lumbar vertebra (grade 3) (photo by M. D. Matczak).

Functional Impact of Intervertebral Disc Disease

Clinical studies show that disc space narrowing in the lumbar section of the spine according to the Lane et al. (1993) grading system causes LBP and leads to disability (de Schepper et al. 2010). Moderate and severe grades (grade 2 and 3) of osteophytes in the lumbar section of the spine have been shown according to Lane et al. (1993) to lead to temporary and chronic LBP (de Schepper et al. 2010). Other studies indicate that osteophytes, end plate sclerosis, and facet joint osteoarthritis have a weak or non-significant association with LBP (Raastad et al. 2015). Thus, studies show contrary results regarding an impact of osteophytes: association between them and LBP or no association (de Schepper et al. 2010). For this reason, osteophytes are problematic features to assess IDD impact on the functioning of an individual. Disc space narrowing, which is a reliable feature to assess pain, cannot be identified in osteological material. However, the fact that clinical studies show that the presence of large osteophytes is

associated with disc depression, which results in pain (Fujiwara et al. 1999; Pye et al. 2007) might suggest that osteophytes might be still used for assessment of pain. In addition, if a person had osteophytes on at least one vertebra, other vertebrae also had osteophytes (Weiler et al. 2012). This helps bioarchaeologists to assess the impact of IDD on the function of an individual by observing osteophytes especially in cases when only a few vertebrae are preserved. Increasing severity of each radiographic feature of lumbar IDD (osteophytes, end-plate sclerosis, disc space narrowing) is associated with increasing severity of those mentioned features. In sum, grades 2 and 3 by Lane et al. (1993) are the same as grades 2 and 3 of the BIDDGS (Table 2). Thus, grades 2 and 3 of the BIDDGS may be characterized by temporary and chronic back pain in the lumbar section. Grade 3 – extensive osteophyte formation on vertebral body – can cause chronic pain. However, medical clinical research does not show that grades 2 and 3 of osteophytes lead to disability (de Schepper et al. 2010). Grade 4 (joint fusion) can result in an inability to move or bend the affected spine section. Ankylosis can have a significant impact on the development of disability. Thus, grade 4 on the BIDDGS may indicate a disability in the modern sense. Medical grading systems also assess facet joint degeneration (Kettler and Wilke 2006). IDD and facet joints osteoarthritis are interdependent; lesions that affect the disc tend to have an effect on the facet joints, "and trauma or instability of the posterior structures may in turn affect the disc" (Gellhorn, Katz and Suri 2013: 4). Ankylosis between the facet joints also leads to immobilization of the joints and together with ankylosis of the vertebral bodies may lead to disability.

Smaller gaps between vertebrae, osteophytes and abnormal spine curvature might cause pinching of nerve structures (e.g., spinal roots that give rise to peripheral nerves), which is manifested by pain in the areas innervated by the compressed structures. Regardless of the location of the degenerative process, pain is the leading symptom, and its intensity increases with the development of the disease, which gradually reduces the joint function and leads to progressive disability. Many publications from orthopaedics and rheumatology (e.g., studies by the Australian Institute of Health and Welfare) indicate that degenerative changes in the spine are often associated with severe pain and reduced fitness of the patient. They lead to localised pain that intensifies initially after exercise and then reappears with any movement and during rest. The pain is caused by the compression of the roots of the sensory spinal nerves. The development of the degenerative process within the spine leads in most cases to the reduction of the space available for the nervous structures and the increasing pressure on these structures. This causes both local pain, the starting point of which is the affected anatomical structures of the spine, and also the pain coming from the compressed nerve roots. The other type of ailment is pain radiating along the area innervated by the compressed root, for example to the limbs or the neck. DJD in the cervical spine might cause headaches (Persson et al. 2007). IDD in the lumbar spine can also cause pain in the hip joint (de Schepper et al. 2013). In more advanced cases, there are so-called "deficient symptoms" (sensory disturbances, tingling, muscle weakness) resulting from the limitation of the functions of the roots as a result of their compression by the surrounding connective tissue structures. Degenerative changes in vertebral discs and back pain are the most common causes of chronic pain, i.e., pain that lasts more than a year (de Schepper et al. 2010). Episodic spinal pain associated with disc degeneration can also be observed (Pye et al. 2007).

The above-mentioned studies show that DJD is a major problem that impacts quality of life, causes chronic pain and leads to disability, with degenerative changes in vertebral joints and back pain being the most common causes of chronic pain. The medical grading system by Lane et al. (1993) was used in a clinical study that assessed how osteophytes in the lumbar section of the spine impact lower back pain (de Schepper et al. 2010). The study by de Schepper et al. (2010) showed a correlation between grade 2 and 3 of osteophytes by Lane et al. (1993) and pain. Since grades 2 and 3 of the BIDDGS are the same as grades 2 and 3 by Lane et al. (1993), they may be characterized by temporary and chronic back pain in the lumbar section, and grade 4 of the BIDDGS may indicate a disability. Other researchers (e.g. Weber et al. 2003; Kinkopf et al. 2021; Yustos et al. 2021) present the bioarchaeological grading systems without presenting how they correspond with medical grading systems. Thus, the advantage of BIDDGS is that it corresponds with the medical grading system by Lane et al. (1993) for a thoracic and lumbar section of the spine, which makes it reliable in the studies about pain, quality of life and disability in the past. For this reason, we named it the Bioarchaeological Intervertebral Disc Disease Grading System.

We now explore whether IDD could have led to impairment and disability in late medieval and early modern Poland through the use of contemporary texts and osteological analysis using the BIDDGS on an individual as case study.

Exploring Disability and Impairment in Late Medieval and Early Modern Poland

Disability and Impairment in Texts

A hagiography of Saint Hedwigis from Wrocław (*Vita Beatae Hedwigis* 1993) from the 14th century states that many people suffered from so-called "cramps" and "stiffness" that made them unable to move or made life extremely difficult. *Vita Beatae Hedwigis* (1993: 101) indicates that a woman from the northern part of Poland:

> "[...] was so unusually distorted by contraction that whenever she had to move, her breasts touched her knees. [...] God added another miracle to this miracle: because the aforementioned woman, having recovered, returned to the places where she was known, and it turned out that she was much more beautiful than before, when she was seen as an invalid" (translated by M. D. Matczak).

It is not known, however, whether this was due to degenerative changes or diseases of the nervous system or another condition. It is worth noting that some of the people were treated well by their families and some of them were rejected. Many people affected by "cramps" were engaged in begging in the streets outside churches (*Vita Beatae Hedwigis* 1993). The loss of body parts as a result of fighting or punishment was regarded as an impairment in the Middle Ages in Poland (Matczak 2020).

Taking care of the sick and the poor was also the duty of the rulers and the powerful. For example, Jan Długosz (2004: 414) reports that Queen Zofia (1405–1461) was generous towards "unhappy people". Being sick was the reason for seeking healing, as seen above in the example of a woman with contraction, at the tombs of saints or during the lifetime of people later declared saints. For example, Saint John of Capistrano, a famous Catholic priest and preacher, healed many sick, blind, lame, and paralyzed and others suffering from weaknesses upon his visit in 1453 in Kraków (Długosz 2004).

Care for the sick continued into later times. For example, Oskar Kolberg (1890: 35), the eminent Polish ethnographer, states that in the 19th century, almost every village and manor house had "its poor, their louts and cripples unable to work, whom it feeds when mercy commands to support them" (translated by M. D. Matczak). On the other hand, at the turn of the 19th and 20th centuries, rural witch doctors were elderly, often physically impaired people, "thus arousing fear and disgust with their appearance alone" (Jaguś 2002: 55). The abovementioned texts show that the concept of physical difference and impairment associated with back problems was present among people inhabiting Poland in the late medieval and modern periods.

Łekno in Medieval and Early Modern Period

The individual we present as a case study was discovered at a cemetery associated with the Cistercian Order in Łekno. The Cistercians developed from the Benedictines in the 11th century in France and created a new form of monastic life, emphasizing the original monastic principles presented by Saint Benedict of Norcia (Eberl 2007; McGuire 2012; Wyrwa 2017a). They provided spiritual advice, developed gothic architecture and painting, established libraries, and contributed to the development of theology. Cistercians did pioneering work on inhabiting deserted places, cutting down forests, and expanding cultivation. They introduced "more effective agricultural methods and new varieties of plants and animals to improve the yields" (Jamroziak 2012: 66). Despite assigning them the role of "pioneers of the wastelands" or "bearers of Gothicism", they were an Order that skilfully matched the settlement, economic and cultural structures of the countries where they settled (Dobosz and Wyrwa 1999).

The oldest Cistercian abbey in Poland was located in Łekno within the former stronghold by Łekno Lake (Fig. 2). The foundation document of the Cistercian monastery in Łekno, according to which Zbylut from the Pałuk family established the monastery in 1153, is the oldest such surviving record in Poland. Therefore, it was entered on the Polish National List of the UNESCO Memory of the World Program (Wyrwa 2016). Initial stages in founding the abbey lasted from about 1143 to 1153. The first monks came from Altenberg near Cologne in Germany to Łekno around 1150, taking part in the construction of the monastery built for them by the founder (Wyrwa 2002, 2018). The first Cistercian sacred building – the oratory – was erected by 1153 by Zbylut. Initially, the church, in accordance with the rules of the Cistercian Order, was named after the Blessed Virgin Mary, keeping the call of Saint Peter, which belonged to an earlier church that functioned in the stronghold (Wyrwa 2000, 2007). In the

mid-13th century, the church was rebuilt, expanded and named after the Blessed Virgin Mary and Saints Peter and Paul. A church surrounded by a cemetery was thus in use from the 13th century. Cistercian monks from Łekno played a central role in spreading Christianity, e.g., they started a Christianization mission in Prussia in 1205 (Wyrwa 2006). An individual from a grave discovered in the presbytery was unequivocally identified as an abbot Herman who was a chaplain, confessor, trustee and collaborator of the 14th century king of Poland, Casimir the Great (Wyrwa 2010; Wyrwa and Miłosz 2006). The abbey in Łekno was one of the richest and fastest developing Cistercian abbeys in Poland in the second half of the 14th century. However, the church experienced engineering and technical problems. The structure was seriously damaged due to a long period of subsidence (Wyrwa 2017b). For this reason, an abbot known as Tylman decided to move the abbey from Łekno to nearby Wągrowiec at the end of the 14th century (around 1396). The process of moving the abbey ended in 1493.

The Cistercians from Łekno and Wągrowiec looked after sick people, as shown in their *Chronicle of Wągrowiec* (*Kronika wągrowiecka* 2004) covering the years 1153–1592. Under the heading for the year 1488, there was a note about the income for the sick, established by the abbot: “Income for the sick is granted, namely the tithe from Moraków and Czerlin, every year three stones from the city’s tallow and hemp from the village of Tarnowo. Whoever breaks these arrangements is excommunicated. [Signed]: Jan, abbot of Wagrowiec, and abbots: Jan from Paradyz and commissioner Andrzej, from Bledzewo.” (translated by M. D. Matczak). This was according to the Order’s rules that focused on charity.

The place of the former monastery in Łekno was still under the patronage of the Łekno-Wągrowiec Cistercians (Wyrwa 2011), and a chapel of unknown name with a cemetery was established on the remains of the old abbey church around 1450 (Wyrwa 2018). The cemetery was used as burial place of the local community from the Tarnowo Pałuckie parish which was located about 800 m away from the church. The cemetery was in use until the end of the 16th century. In 1620 the chapel and cemetery were abandoned, and in the 19th and 20th centuries, it became an agricultural field (Wyrwa 2018).

The excavations of the abbey, church, chapel and cemetery took place between 1982 and 2007 in the framework of the Łekno Archaeological Expedition lead by Andrzej Marek Wyrwa. A cemetery at site 3 (see Fig. 1), which is where individual Ł3/55/82a was found, contained around 400 burials of monks and local people from villages belonging to the Cistercians. The preliminary osteological analyses concerning sex and age estimation, palaeopathology and stature have been carried out (Miłosz 2000). The analyses on 169 adult individuals, including 91 males, 54 females and 24 individuals of unknown sex, indicated that the average stature of males was 173.2 cm and of females 162.7 cm. Pathological lesions included fractures, new bone formation and developmental changes. The preliminary results indicated degenerative disease in 56 (69%) out of 196 individuals, which included osteophytes and Schmorl’s nodes on lumbar vertebrae and hypertrophic changes in shoulder joints (Miłosz 2000). Ł3/66/90 individual was distinctive because he had skeletal dysplasias such as achondroplasia and Léri-Weill dyschondrosteosis and ulnar hemimelia (Matczak et al. 2022). Advances in clinical and osteological research over more than 20 years since the preliminary analysis as well as new findings of skeletons at the site since the publication of the preliminary research have stimulated ongoing re-evaluation (e.g. Matczak et al. 2022). Moreover, the comprehensive analysis of the cemetery including archaeological findings have not been conducted so far. Here we present a skeleton analysed as part of a new comprehensive analysis of osteological and archaeological materials and a cemetery.

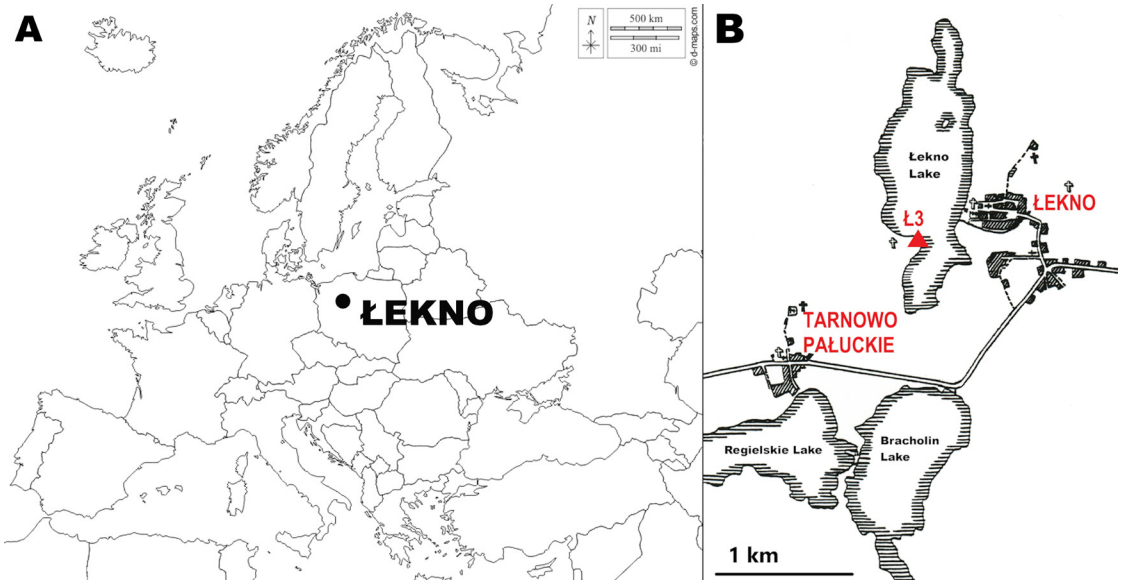

Fig. 2. (a) Location of Łekno in Poland (www.d-maps.com). (b) Location of the Łekno 3 site (Ł3 – Cistercian abbey and cemetery) and Tarnowo Pałuckie (Archive of the Łekno Archaeological Expedition).

Ł3/55/82a from Łekno: An Adult Male with Intervertebral Disc Disease

Individual Ł3/55/82a was found in grave 10 at a cemetery in site 3 in Łekno. This individual had moderate and severe IDD in the thoracic and lumbar section of the spine, which might be associated with chronic pain. In the following sections we consider if his ailments were perceived as disability in the past.

Os coxae morphology such as ventral arc, subpubic concavity and ischiopubic ramus ridge as well as cranial morphology such as supra-orbital ridge and mental eminence suggest Ł3/55/82 was a male. Nuchal crest and mastoid process are ambiguous. Supra-orbital margins are more characteristic for female. Os coxae morphology is the most reliable for sex in the human skeleton (Buikstra and Ubelaker 1994), and therefore we conclude that Ł3/55/82a was a male. Due to the fact that aging processes do not progress in the same manner for all individuals, it is difficult to exactly estimate age-at-death for middle and old adults. Transition Analysis 2 (Boldsen et al. 2002) gives interval range and a maximum likely age, and therefore it is one of the best available methods. A maximum age likelihood estimate was 38.6 years at the time of death for Ł3/55/82a (29.3–55.5 years old, 95% interval range). Appendix Table 3 presents stages of morphological changes of Ł3/55/82a estimated within the Transition Analysis 2. Initial bony changes used in the Transition Analysis 2 are of developmental nature: e.g., the ventral rampart at the pubic symphysis. Later changes, such as breakdown of the pubic symphysis, are degenerative. Exostoses on auricular surface of Ł3/55/82a are degenerative in nature and are traits used for age estimation. The stature of Ł3/55/82a was 174 cm (Breitinger 1937), which was an average height for males in Łekno (Miłosz 2000).

Based on the analysis of stratigraphy, the skeleton is dated from the 14th to the end of the 16th century AD. Ł3/55/82a was buried close to the northwest corner of the Cistercian church and a chapel of unknown name. He was interred on the SW-NE axis as were the majority of individuals on the site. The individual was buried in a supine position with the left upper limb positioned along the body (Fig. 3). The hand bones of the left upper limb were located under the pelvis. The hand bones of the right upper limb were not found. There were no grave goods. Traces of wood decay under the skeleton along almost the entire length, an iron nail and a coffin fitting (element connecting the coffin boards) with an iron nail fragment indicate that he was buried in a coffin (Mucha, Piontek and Widelska 1986). At the cemetery, only a minority of individuals were buried in coffins or other grave constructions. Overall, however, grave of individual Ł3/55/82a appears to be a typical according to the ritual of that time. Only four individuals at Łekno 3 site were buried in atypical or so-called anti-vampiric graves (Wyrwa 2008). This suggests Ł3/55/82a was properly commemorated after death according to the burial customs at that time.

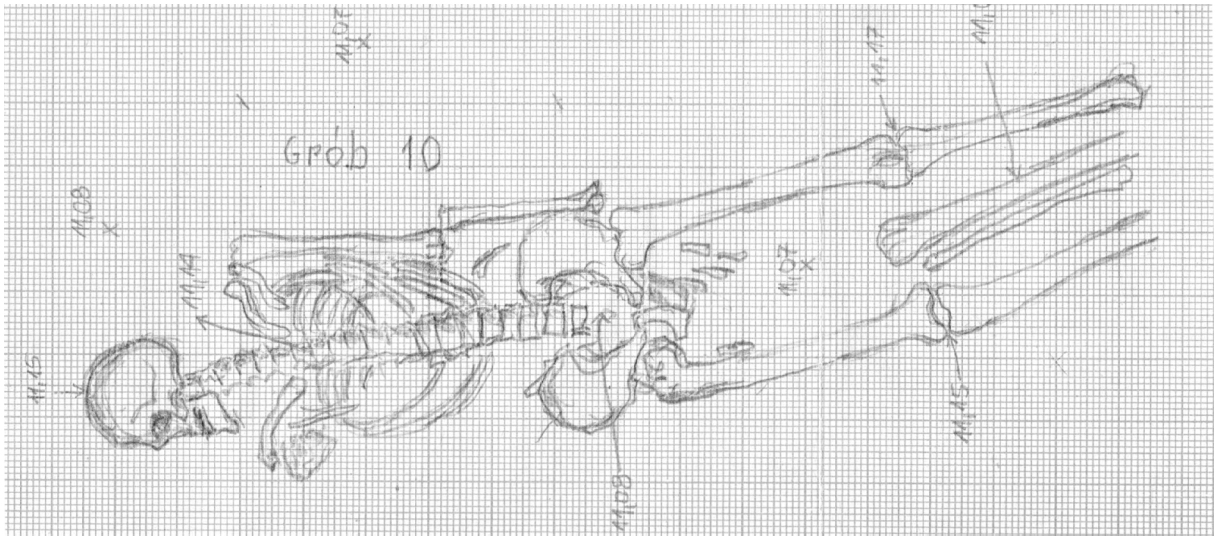

Fig. 3. Grave 10 with Ł3/55/82a individual at site 3 in Łekno, Poland (by L. Fijał, Archive of the Łekno Archaeological Expedition). Note that the drawing does not present all unearthed bones of Ł3/55/82a.

The skeleton displays two abscesses on the right maxilla and a small amount of calculus on the right upper premolars and third molar. Healed porotic hyperostosis is present on the parietal and the frontal bones. Ossification of the costal cartilages of both first ribs is visible. The left clavicle displays an antemortem complete fracture at midshaft, which was healed and stable at the time of death. The bone was misaligned, and the acromial end was rotated for around 90 degrees inferiorly. The rotation together with malunion and new bone formation caused deformity of the clavicle. The left clavicle was 13 mm shorter than the right one. Myositis ossificans of the tibialis posterior muscle is visible on the right tibia on the lateral aspect of the diaphysis, lateral to the nutrient foramen and in the 1/3 of medial diaphysis of the right fibula.

Osteoarthritic changes were observed on proximal and distal ends of both humeri, the heads of both radii, the proximal ends of both ulnae, certain carpals (both scaphoids, lunates, capitates and hamates), the acetabulum of both os coxae, the distal end of the right femur, the distal end of both tibiae, and on the left calcaneus.

Appendix Table 4 and Fig. 4–6 present mild, moderate and severe osteophytic lesions and pitting on vertebral bodies, which indicate IDD, and pathological lesions in the facets and costovertebral joints, which indicate osteoarthritis (Waldron 2009). Schmorl's nodes might be associated with IDD (Rogers 2000). Ethesophytes (T6–T9) on the right anterior aspect of vertebral bodies might indicate other diseases (Fig. 4).[1] Florid ossification into the anterior longitudinal ligament on the right side in the thoracic region or any other region of the spine is characteristic of diffuse idiopathic skeletal hyperostosis (DISH), which has been associated with metabolic disease and diet (Foster et al. 2018; Waldron 2019). Modern clinical diagnosis "requires the presence of four contiguous fused vertebrae with extraspinal enthesophytes" (Waldron 2019: 730). However, palaeopathological cases might not have four continuous fused vertebrae because the condition was not fully developed or due to post-mortem damage. Ł3/52/82a does not have fused vertebrae. However, T9 and T10 show signs of post-mortem damage in locations of extensive spicular formation. Fragile bones might have broken during the excavation, cleaning, and further processing. Therefore, we cannot exclude that they were fused. Foster et al. (2018) indicate that evidence for the anterior longitudinal ligament ossification, vertebral ankylosis or bilateral enthesophytes at the olecranon, patella, tibial tuberosity or posterior calcaneus of at least grade 2 development are markers of possible DISH. DISH is age-related, appears in individuals over 40 years old and is more common in men than women (Foster et al. 2018). Since Ł3/55/82a was male aged probably under 40 at the time of death, had ossification of the anterior

1 Enthesophytes are oriented vertically, form within the anterior and posterior longitudinal ligaments and show a "flowing' pattern" (Buikstra and Ubelaker 1994).

longitudinal ligament on T6–T9 and bilateral enthesophytes, he could possibly have had DISH. However, the preservation of the material and the similarity in the pattern of skeletal changes make it difficult to conclude with certainty. Ankylosing spondylitis, fluorosis, reactive arthropathy and psoriatic arthropathy should be excluded from differential diagnosis because Ł3/55/82a does not display pathognomonic lesions of these conditions (Appendix Table 5). Therefore, we conclude that Ł3/55/82a had IDD, osteoarchritis in the facet and costovertebral joints and possibly early stages of DISH. IDD, DISH and osteoarthritis might coexist (di Girolamo et al. 2001; Rogers and Waldron 2001; Mader et al. 2009). The sacrum of Ł3/55/82a has a sharp ridge of slight spicules of osteophytes extending horizontally on the promontory.

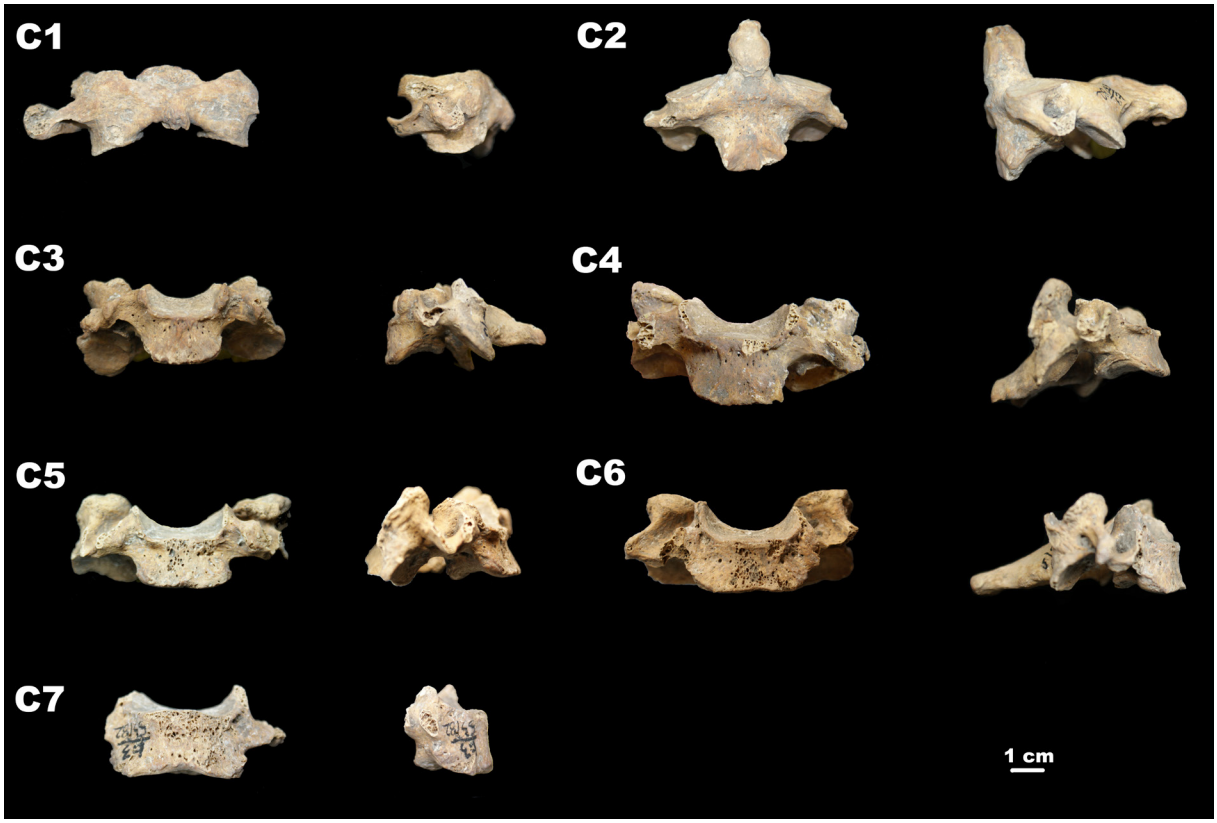

Fig. 4. Pathological lesions observed in the cervical vertebrae of Ł3/55/82a. C1–C3, C5–C7: none osteophytes (grade 0 based on Table 1). C4: mild grade of osteophytes (grade 1 based on Table 1). Fragmented spinous processes and transverse processes were not photographed (photo by M. D. Matczak).

Individual Daily Life, Identity and Social Perception

We do not know whether Ł3/55/82a dates to the 14th–15th century (Late Middle Ages) and therefore was a monk or to the mid-15th–16th century (early modern period), when he would have been a local lay person. However, the analysis of the stratigraphy of the site indicates that he lived in the early modern period. In this case he most likely was a peasant and belonged to a village from Tarnowo Pałuckie parish that was part of the Cistercian property. The life of Cistercian monks, their lay brothers and peasants involved physically hard work.

Peasants were the largest social group – constituting 69.5% of society – and were of the lowest social standing in Poland (Wyczański 1986). Polish villages were diverse and had many types of inhabitants. Polish “kmieć” – a peasant who had a farm – was the most frequent type of villager. The others did not own land and farms. There were also owners of inns, mills, craftsmen, and fishermen, but we do not know which type of peasant Ł3/55/82a was. Children in villages were meant to work from early years, so Ł3/55/82a was probably helping his parents

in childhood. The rights of peasants started to be reduced in the 15th and 16th centuries. One of the examples of restricted rights was a ban from leaving a village. Only one peasant could leave a village per year. It is probable that Ł3/55/82a was local or came from a nearby village.

Healed porotic hyperostosis on the parietal and the frontal bones of Ł3/55/82a could be associated with megaloblastic anaemia (Walker et al. 2009). Healed lesions indicate that the condition was not active at the time of death, however, its duration is unknown. Two abscesses on the right maxilla of Ł3/55/82a could have led to severe pain, difficulty in swallowing, facial swelling and even fever (Górski 1983; Roberts and Manchester 2010).

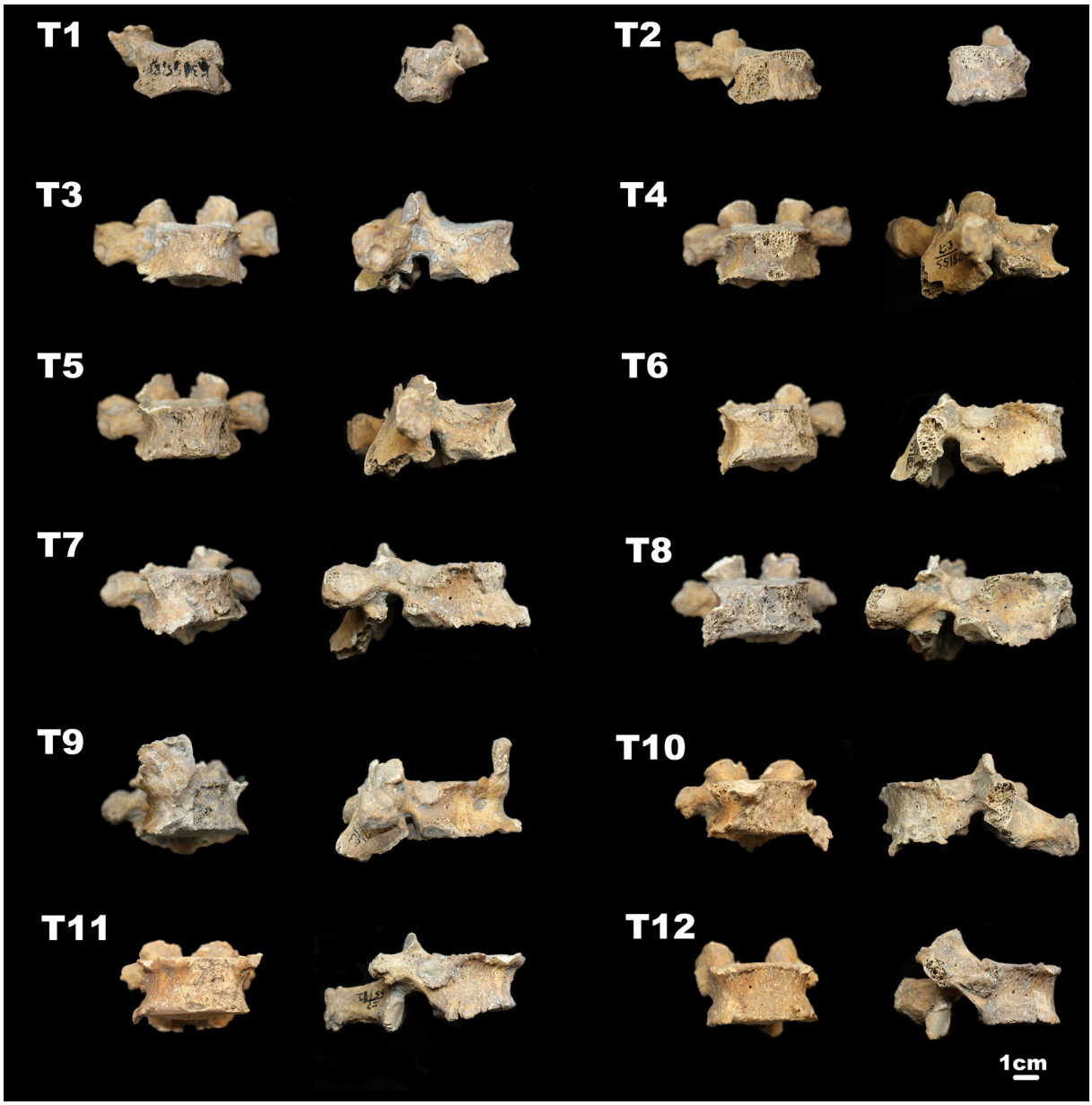

Fig. 5. Pathological lesions observed in the thoracic vertebrae of Ł3/55/82a. T6: none of osteophytes (grade 0 based on Table 2). T1–T2, T4, T7–T10, T12: mild grade of osteophytes (grade 1 based on Table 2). T3–T5, T10, T11: moderate grade of osteophytes (grade 2 based on Table 2). T10: severe grade of osteophytes (grade 3 based on Table 2). T6–T9: enthesophytes. Fragmented spinous processes and transverse processes were not photographed (photo by M. D. Matczak).

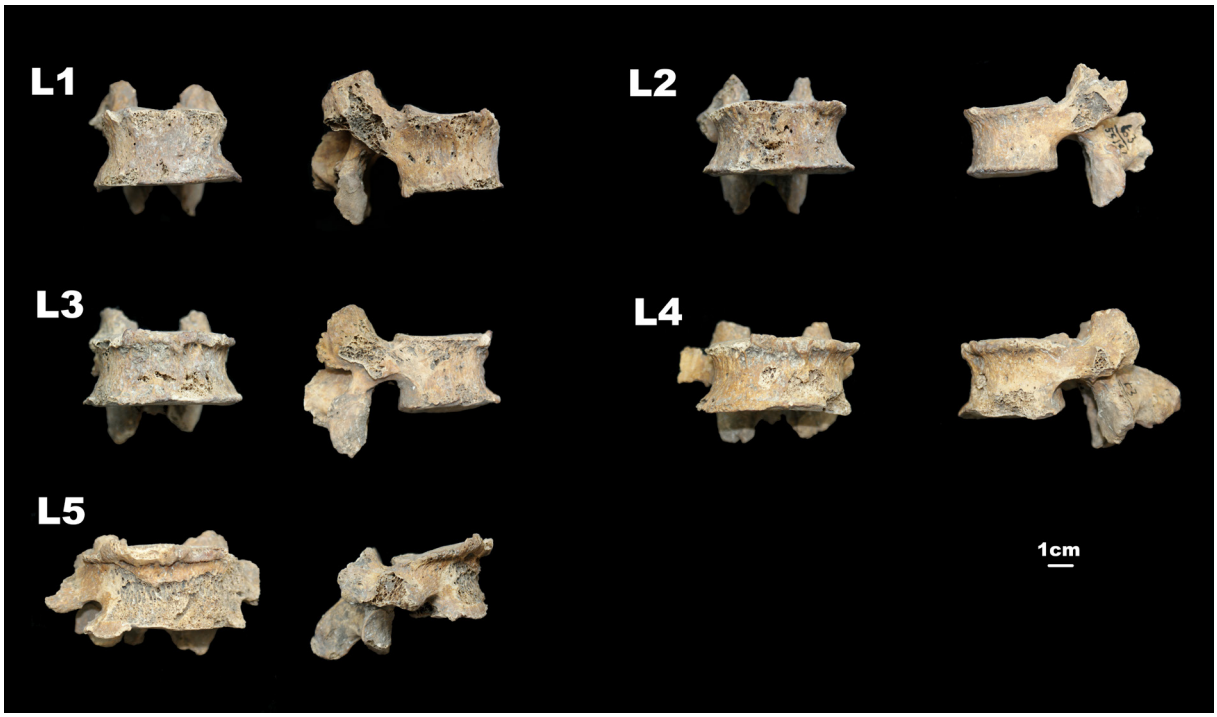

Fig. 6. Pathological lesions observed in the lumbar vertebrae of Ł3/55/82a. L1–L2: mild grade of osteophytes (grade 1 based on Table 2). L3–L4: moderate grade of osteophytes (grade 2 based on Table 2). L5: severe grade of osteophytes (grade 3 based on Table 2) (photo by M. D. Matczak).

Ł3/55/82a could have broken his clavicle as a result of falling onto the shoulder or a horse-riding accident (see Burnham et al. 2016). The fracture was stable and healed. The fractured bone was misaligned, which caused deformity, and it was 13 mm shorter than the right one. According to clinical medical studies malunion may lead to pain, loss of strength, rapid fatigue, paraesthesia of the arm and hand, problems with sleeping on the back, and cosmetic complaints (Hillen et al. 2010). While Ł3/55/82a would have had discomfort initially, it is unknown if he had the aforementioned symptoms. The fracture would probably cause pain and limit his various activities until healing occurred after a couple of months. During his short-term convalescence after breaking his clavicle, if he was a monk, he may have been cared for by monks, as the Order was obliged to be charitable and to care for others (McGuire 2012). If he was a peasant, he could have been cared for by his family. Myositis ossificans of the tibialis posterior muscle in Ł3/55/82a could be a result of trauma to the muscle. According to medical research, it might cause pain and stiffness of the knee joint and some functional limitations (Nieuwenhuizen et al. 2020), however, we do not know if this was the case in this individual.

Degenerative changes could be age-related and develop as a result of physical work. IDD in the thoracic and the lumbar part of the spine could have caused sporadic pain during early stages of the disease. This could have made working difficult although still possible. Osteophytes of grade 2 in the lumbar section may be characterized by temporary and chronic back pain. As time passed, DJD could significantly limit his functioning and performance of duties that required the use of force: e.g., cutting down trees, ploughing fields, growing crops, raising livestock or performing craftsmen's work (for peasants' daily activities, see Markiewicz 2004). He would have had problems engaging in tasks that required a lot of strength. When DJD advanced, extensive spicular formation of osteophyte on T10 and L5 body might have caused chronic, severe pain, however, it is unknown if this would have prevented the individual from performing heavy duties for a significant period of time. Schmorl's nodes cause pain in some individuals, whereas in others they do not (Williams et al. 2007; de Schepper et al. 2010). However, clinical research shows that ≥1 Schmorl's nodes on lumbar vertebrae and ≥2 Schmorl's nodes on thoracic vertebrae can cause pain and stiffness in a particular joint (Williams et al. 2007; Faccia and Williams 2008). Plomp (2017) discusses studies that have shown evidence that Schmorl's nodes cause pain. Thus, we consider the presence of ≥1

Schmorl's nodes on lumbar vertebrae and ≥2 Schmorl's nodes on thoracic vertebrae as indicators of pain, which has an impact on the quality of life of an individual. Ł3/55/82a had Schmorl's nodes on T3–T12 vertebrae which could have contributed to back pain. Cervical and lumbar facet joint osteoarthritis can cause spinal pain that can radiate to neck and limbs (Gellhorn, Katz and Suri 2013). It is possible that facet joint osteoarthritis contributed to back pain in Ł3/55/82a. DISH might be an asymptomatic condition as well as lead to pain, back stiffness, limited range of spinal motion, paraplegia and increased susceptibility to unstable spinal fractures after trivial trauma (Rogers and Waldron 2001; Mader et al. 2009). Since possible DISH was early in Ł3/55/82a, he could have felt some kind of stiffness related to the anterior lateral ligament ossification in T9 and T10, but it is unknown if he had other ailments. All those lesions had an impact on back problems and functioning and performing tasks by Ł3/55/82a. Enthesopathies may probably be responsible for a reduced range of motion in joints and possibly also for the subsequent development of osteoarthritic changes (Mader et al. 2009).

Ł3/55/82a could have benefited from the income for the sick granted by the monks, especially because it was granted from the proceeds of hemp production in the village of Tarnowo (*Kronika wągrowiecka* 2004) to which parish he belonged. The Cistercians from Łekno established income for the sick, as mentioned earlier in this text (*Kronika wągrowiecka* 2004), after they found a new monastery in nearby Wągrowiec. People who were obliged to donate to the sick but did not do this, could have been excommunicated (*Kronika wągrowiecka* 2004). Excommunication is the highest ecclesiastical punishment consisting in exclusion from the life of the Church. This indicates that the Cistercians did not hesitate to use the highest church punishment for those who did not want to support the sick.

Discussion

Back Pain and Disability in the Past

Of eight analysed chronicles and hagiographies from medieval Poland, none explicitly describe back pain as impairment or disability (Matczak 2020). Certainly, back cramps were recognized as conditions that affected a person's ability to work and deformed the body in medieval Poland (*Vita Beatae Hedwigis* 1993). A hagiographer described a woman distorted by contraction by using word "languida" in *Vita Sanctae Hedwigis* (1961: 607–608). The word languidus, -a, -um means: weak, feeble, ill, sick, diseased, invalid, inactive, sluggish, torpid, and slow-moving (*Dictionary of Medieval Latin from British Sources*). This might indicate that back problems that deformed the body as in her case were seen as sickness and possibly as impariment. This might confirm findings of other researchers (Allan and Waddell 1989) that back pain was noticed and considered as a condition, but it was not considered as "chronic disability". Acute illness such as infectious diseases, plagues, malnutrition and high mortality rate were regarded as bigger health problems by medieval society rather than LBP and DJD. People who were suffering from "cramps" and "stiffness" of limbs and begged in front of the churches and were marginalised, in our modern sense could be considered as disabled. However, we do not find descriptions of begging and marginalisation in texts associated with back pain. Of course, not all the medieval texts have survived, and secondly, not all diseases and impairments were recorded in the texts. Third, not all texts have been analysed in this regard.

From a biological and medical point of view, Ł3/55/82a from Łekno could have been physically challenged but he was not impaired. When we consider his cultural context – living conditions and the texts from the era – it seems that Ł3/55/82a with his IDD causing pain could have been regarded as ill and unable to work at a later stage of his life, thus needing help and healing. He was not likely considered disabled in medieval and early modern Poland. However, he was clearly not completely physically fit. Due to his challenging conditions (fracture, IDD, DISH), he could have been cared for and supported by his family, other peasants and the monastic Order.

Kinkopf et al. (2021) found that less economic access was associated with increased risk for degenerative spine disease in medieval Italy. However, the monastic community with better economic access in medieval Łekno was obliged by Cistercian rules to undertake hard physical work (Wyrwa 2020), which might have influenced development of DJD. Peasants from Cistercian villages also had to perform physical work, which in turn had an impact on the development of DJD including IDD. Despite the status differences between monastic and peasant community

in Łekno, DJD and IDD might have similar degrees of expression in these populations, something that should, however, be investigated.

The BIDDGS helped to move beyond the biological description of IDD towards biocultural and social interpretation of the life of Ł3/55/82a. The detailed comparison of the BIDDGS with medical grading systems enabled us to establish which grades of expression of IDD in Ł3/55/82a could have led to temporal and chronic pain and how this affected the ability of this individual to perform various tasks. This allowed us to (re)construct the functioning of this individual with IDD from the late medieval and early modern periods in Poland. This osteobiography brought us closer to the past people and helped us to better understand how they experienced IDD and perceived LBP. More texts from medieval Poland should be analysed to establish whether LBP was considered a disability. Moreover, Ł3/55/82a is an example of a case that demonstrates how to distinguish IDD from possible DISH.

Influence of Degenerative Changes on Functioning

Degenerative disease is characterized by various stages of development, which translates into different occurrences and perceptions of pain. However, even at an advanced stage of the disease, there may be no symptoms (Roberts and Manchester 2010). Studies indicate that a person may complain of severe pain in, e.g., the knee joints, although they do not show degenerative changes, and another person, despite the advanced degenerative process, may not feel pain (Rogers and Waldron 1995; Bedson and Croft 2008; Waldron 2012). Thus, studies show contradictory results: the same bone lesion can be asymptomatic, cause pain or even lead to disability (Plomp 2017). The above fact indicates a highly subjective perception of the symptoms of a degenerative disease, which is also confirmed in clinical practice, where the diagnosis of the cause of pain often requires numerous tests and imaging examinations, and, thus, different types of grading systems used by a medical practitioner (e.g., Kellgren et al. 1963; Lane et al. 1993; Kettler and Wilke 2006; de Schepper et al. 2010). This subjective nature of pain has important implications for bioarchaeology and palaeopathology, as the palaeopathologist does not know if pain was felt with particular bone lesions.

As discussed, using a scale to measure pain in modern clinical settings is problematic because pain associated with degenerative changes is subjective and depends on the patient (de Schepper et al. 2010; Swift 2012). Pain may not happen every day, but it may be present most days and can take many forms and many different ways. When pain occurs, it may be accompanied by stiffness of the joint and other ailments related to the inability to use it. This makes it difficult for people who suffer from degenerative changes to plan their daily activities, which results in low mental well-being and stress (Australian Institute of Health and Welfare 2020).

It should be remembered that age-related wear and tear of the joints play a key role in the development of degenerative changes and in developing of disability. Osteophytes increase in "severity with age, individuals who died prior to becoming an 'old' adult (65 + years) may not have developed large, diffused osteophytes and therefore, the associated pain and disability reported by older adults in modern clinical studies" (Plomp 2017: 150). This has an important implication for bioarchaeology as archaeological populations are on average younger than modern ones. In Poland, the average life expectancy at birth was 22 years in the medieval population in Kałdus, 23.1 years in the 16th to 18th centuries in Kamionki Duże and 29.2 years in the 14th to19th century in Płonkowo (Kozłowski 2012). According to the World Bank (2021b), the global average life expectancy was more than 72.74 years and 77.85 years in Poland in 2019. In modern populations another age-related issue is that disability due to lesions in the spine is more common among middle-aged individuals, followed by the elderly and young adults (Candotti et al. 2015). Back pain, and especially chronic LBP, has a high prevalence in middle adulthood and old age. Disability in chronic LBP patients increases with advancing age, but indicators of quality of life are equal or even higher in older individuals (Wettstein et al. 2019). This refers to the "well-being paradox" (Wettstein et al. 2019) that states that although older individuals have to face cognitive and physical declines, other loss experiences and a higher risk of disability, their well-being is not lower compared with younger individuals. Despite higher disability scores with advancing age, older patients do not have lower quality of life, or they may have even higher quality of life than younger individuals. Bioarchaeologists should consider age when interpreting and discussing the relationship between spinal lesions, pain and disability. Moreover, the types of work and level of activity differ between

modern and past populations (Plomp 2017). It can be assumed that people in the past performed many activities related to physical work, e.g., in the field, cultivating grain or vegetables, as artisans and warriors, etc. The pain associated with degenerative changes could be very difficult alongside heavy physical work. On the other hand, these people could also be more used to pain and thus learn to live with it and accept it more than people of the 21st century. The archaeological populations were much more active than the contemporary ones and "the activity requirements of a younger archaeological population may off-set the age-related increase in symptoms of an older clinical population" (Young and Lemaire 2014: 717).

There are also other factors that should be considered in research on DJD in past populations: gender, ethnic origin, genetic predisposition, past diseases and injuries (Aufderheide and Rodríguez-Martín 2006; Waldron 2012). For example, according to Rosemann et al. (2007), women have a lower quality of life than men, which is associated with greater pain, reduced life satisfaction and disability in Germany today. We also should keep in mind that modern populations use certain interventions (e.g., drugs) that mitigate symptoms, which have an impact on clinical studies of joint disease and pain, and which were unavailable to past populations. Thus, some areas of comparison of joint changes between modern and past populations might remain challenging.

Conclusions

As this study shows, the understanding of the impact of IDD and DJD in the spine on human functioning has significant value because this disease was, and still is, one of the most frequent in populations. We proposed the Bioarchaeological Intervertebral Disc Disease Grading System (BIDDGS) and its comparison to the medical grading systems to assess the impact of IDD on impairment and disability in past populations, which is a novel approach in biocultural studies in archaeology. The BIDDGS for thoracic and lumbar spine is compatible with the medical grading system proposed by Lane et al. (1993) and thus might be used for quality-of-life assessment in past populations. We hope that the methodological discussion of medical and bioarchaeological grading systems for IDD assessment will contribute to further analyses.

The analysis of the life of the adult male Ł3/55/82a shows that he was affected by IDD and other spinal diseases. The historical texts, archaeological context and palaeopathological assessment indicate that he could have been physically challenged and his physical fitness could have been limited. There were probably a significant number of individuals with similar pathological lesions, and they were probably not regarded as disabled in the medieval and early modern period since a number of contemporary texts do not allude to this. This study shows that these people were included within society despite their functional limitations. The future quantitative studies on the impact of DJD on impairment or disability on a population level might shed more light on daily life and functioning of such individuals. Further analyses that are in progress will reveal more information about diet, date and origin that will allow for more precise description of lives of individuals.

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Appendix

Skeletal elements	**Stages**		
Pubic Symphysis	**Left**	**Right**	
Symphyseal Relief	Flat	Residual billowing – Flat	
Dorsal Symphyseal Texture	Coarse grained	Coarse grained	
Superior Protuberance	Integrated	Late protuberance – Integrated	
Ventral Symphyseal Margin	[Rampart completion without sulcus – Rim]	Rampart completion without sulcus	
Dorsal Symphyseal Margin	Rim	Flattening complete – Rim	
Iliac Auricular Surface	**Left**	**Right**	
Superior Demiface Topography	Flat to irregular	Flat to irregular	
Inferior Demiface Topography	Median elevation – Flat to irregular	Median elevation – Flat to irregular	
Superior Surface Characteristics	Flat (no billows)	1/3–2/3 covered by billows	
Middle Surface Characteristics	Flat (no billows)	<1/3 covered by billows	
Inferior Surface Characteristics	Flat (no billows)	Flat (no billows)	
Inferior Surface Texture	[Microporosity]	[Microporosity]	
Superior Posterior Iliac Exostoses	Rounded exostoses	Rounded exostoses	
Inferior Posterior Iliac Exostoses	PMD	[Touching exostoses]	
Posterior Iliac Exostoses	[Smooth (no exostoses or spicules) – Rounded exostoses]	[Smooth (no exostoses or spicules) – Rounded exostoses]	
Cranial Sutures	**Left**	**Center**	**Right**
Coronal Pterica	Obliterated		Obliterated
Sagittal Obelica		Partially obliterated	
Lambdoidal Asterica	PMD		Partially obliterated – Punctuated
Interpalatine		PMD	
Zygomaticomaxillary	PMD		Juxtaposed

Table 3. Stages of morphological changes of Ł3/55/82a used for age estimation in the Transition Analysis 2. PMD: post-mortem damage. Parentheses indicate post-mortem damage.

V	Vertebral body	BIDDGS	The facet joints and costovertebral joints
C1	Lipping: barely discernible on 1/3 surface of the articular surface for the dens.[2]	None	Lipping: barely discernible on the inferior articular surfaces.
C2	Porosity: pinpoint porosity on <1/3 of the inferior aspect of the body. Lipping on the anterior aspect of the dens.[3]	None	Eburnation: barely discernible on >2/3 surface of both superior and right interior articular facets.
C3	Porosity: pinpoint porosity on <1/3 of the superior and inferior aspects of the body.	None	Lipping: barely discernible on <1/3 surface of the superior and inferior articular facets. Eburnation: barely discernible and polish on <1/3 of the right inferior articular facet.
C4	Osteophytes: barely discernible multiple osteophytes on the antero-superior and singular osteophyte on the left inferior aspects of the body. Porosity: pinpoint porosity on <1/3 of the superior and inferior aspects of the body.	Mild	Lipping: barely discernible on 1/3 surface of both superior and right inferior articular surfaces. Sharp ridge, slight spicules on >2/3 of the left inferior articular surface. Eburnation: polish with grooves on <1/3 of the lower left articular surface.
C5	Porosity: pinpoint porosity on <1/3 of the superior and inferior aspects of the body.	None	Lipping: sharp ridge, slight spicules on 1/3 of the left superior articular surface. Eburnation: polish with grooves on <1/3 of the left superior articular surface.
C6	Porosity: pinpoint porosity on <1/3 of the superior and inferior aspects of the body.	None	Lipping: barely discernible on 1/3–2/3 of the left inferior articular surface.
C7	Porosity: pinpoint porosity on <1/3 of the superior and inferior aspects of the body.	None	Lipping: barely discernible on 1/3 of the inferior articular surfaces.
T1	Osteophytes: barely discernible osteophytes on the inferior aspect of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Mild	Lipping: barely discernible on 1/3–2/3 surface of the right superior articular surface. Sharp ridge, slight spicules on >2/3 of the left superior articular surface.
T2	Osteophytes: barely discernible multiple osteophytes extending horizontally on the anterior and left inferior aspect of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Mild	Lipping: barely discernible on 1/3–2/3 of the inferior articular surfaces.

2 C1 is an atypical vertebra and does not have a vertebral body, instead the dens of C2 sits where a body of a typical vertebra would be and articulates with the posterior facet for the dens on the anterior arch of C1. Therefore, we inserted the information about lipping in this column.

3 C2 is an atypical cervical vertebra that lacks a typical vertebral body but has the dens.

T3	Osteophytes: sharp ridge, slight spicules of singular osteophytes extending horizontally on the left superior and right inferior aspects of the body. Schmorl's node: on the inferior aspect of the body. Porosity: pinpoint porosity on <1/3 of the superior and inferior aspects of the body.	Moderate	Lipping: barely discernible on <1/3 of the superior articular surfaces and on >2/3 of the articular surfaces for the rib tubercle.
T4	Osteophytes: barely discernible singular osteophytes extending on the right superior aspect of the body. Sharp ridge, slight spicule of singular osteophyte extending horizontally on the right inferior aspect of the body. Schmorl's node: on the superior and inferior aspects of the body. Porosity: pinpoint porosity on <1/3 of the superior and inferior aspects of the body.	Mild and moderate	Lipping: barely discernible on <1/3 of the superior articular surfaces and the articular surfaces for the rib tubercle.
T5	Osteophytes: sharp ridge, slight spicule of singular osteophyte extending horizontally on the right superior aspect of the body. Schmorl's node: on the superior and inferior aspects of the body. Porosity: pinpoint porosity on >2/3 of the superior and inferior aspects of the body.	Moderate	Lipping: barely discernible on <1/3 of the superior articular surfaces. Eburnation: barely discernible on >2/3 of the superior articular surfaces.
T6	Enthesophytes: barely discernible multiple enthesophytes extending on the right superior and sharp ridge, slight spicules of multiple enthesophytes on the right inferior aspects of the body. Schmorl's node: on the inferior aspect of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	None	Lipping: barely discernible on <1/3 of the left superior and inferior articular surfaces.
T7	Osteophytes: barely discernible singular osteophyte extending on the right superior aspect of the body. Enthesophytes: sharp ridge of singular enthesophyte on the right and anteroinferior aspect of the body. Schmorl's node: on the superior and inferior aspects of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Mild	Lipping: barely discernible on 1/3–2/3 of the left articular surfaces.
T8	Osteophytes: barely discernible singular osteophytes on the right superior aspect of the body. Enthesophytes: sharp ridge, slight spicules of enthesophytes extending on the right inferior aspect of the body. Schmorl's node: on the superior and inferior aspects of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Mild	Lipping: barely discernible on 1/3–2/3 surface of all articular surfaces and the articular surfaces for the rib tubercle. Eburnation: barely discernible and grooves on >2/3 of the left superior articular surface.
T9	Osteophytes: barely discernible singular osteophytes on the right and left superior aspect of the body. Enthesophytes: extensive spicular formation of enthesophyte on the right superior aspect of the body. Sharp ridge, slight spicules of enthesophyte extending on the right inferior aspect of the body. Schmorl's node: on the superior and inferior aspects of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Mild	Lipping: sharp ridge, slight spicules on >2/3 of superior articular surfaces. Barely discernible on 1/3–2/3 of inferior articular surfaces. Eburnation: polish with grooves on 1/3–2/3 of the left superior surface. Barely discernible on <1/3 of the right superior surface.

T10	Osteophytes: barely discernible singular osteophytes on the left superior aspect of the body. Sharp ridge, slight spicules of osteophytes extending horizontally on the right and left inferior aspect of the body. Extensive spicular formation of singular osteophyte on the left inferior aspect of the body. Schmorl's node: on the superior and inferior aspects of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Mild, moderate and severe	Lipping: barely discernible on <1/3 of all articular surfaces of the facet joints and the right articular surface for the rib tubercle. Eburnation: barely discernible on > 2/3 of the left superior articular surface.
T11	Osteophytes: sharp ridge, slight spicules of multiple osteophytes on the left, anterior and right superior aspect of the body and the right inferior aspect of the body. Schmorl's node: on the inferior aspect of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Moderate	Lipping: barely discernible on 1/3–2/3 of the left articular surface. Eburnation: barely discernible on 1/3–2/3 of the right superior and inferior articular surfaces.
T12	Osteophytes: barely discernible multiple osteophytes on the superior and the right inferior aspects of the body. Schmorl's node: on the superior aspect of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Mild	Eburnation: barely discernible on >2/3 of all articular surfaces of the facet joints.
L1	Osteophytes: barely discernible singular osteophytes on the right superior and right and left inferior aspects of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Mild	Lipping: barely discernible on <1/3 of all articular surfaces. Eburnation: barely discernible on >2/3 of the right superior and inferior articular surfaces.
L2	Osteophytes: barely discernible osteophytes on the whole superior and inferior aspects of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Mild	Lipping: barely discernible on 1/3–2/3 surface of all articular surfaces.
L3	Osteophytes: sharp ridge, slight spicules of multiple osteophytes on the whole superior and inferior aspects of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Moderate	Lipping: barely discernible on 1/3–2/3 surface of all articular surfaces.
L4	Osteophytes: sharp ridge, slight spicules of multiple osteophytes extending horizontally on the anterior and left superior aspect of the body and the right inferior aspect of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Moderate	Lipping: barely discernible on 1/3–2/3 surface of the inferior articular surfaces. Sharp ridge, slight spicules of the superior articular surfaces.
L5	Osteophytes: extensive spicular formation of multiple osteophytes on the anterior and right superior and the right inferior aspects of the body. Porosity: pinpoint porosity on 1/3–2/3 of the superior and inferior aspects of the body.	Severe	Lipping: barely discernible on 1/3–2/3 surface of all articular surfaces. Eburnation: barely discernible on 1/–2/3 of the left superior articular facet.

Table 4. Pathological lesions identified on vertebrae of Ł3/55/82a from Łekno. V: vertebrae. BIDDGS: the Bioarchaeological Intervertebral Disc Disease Grading System.

Differential diagnosis	**Ł3/55/82a**
Intervertebral disc disease	
Osteophytes	Yes
Pitting on the inferior or superior surface of the vertebral bodies.	Yes
DISH	

Fusion of at least four vertebrae by bony bridges arising from the anterolateral aspects of vertebral bodies, involving the anterior and right aspects.	No
Flowing (“dripping candle wax”) appearance of bony bridges.	Yes in T8 and T9?
Lack of involvement of apophyseal joints.	No?
The process usually begins in the midthoracic spine.	T6–T10
Intervertebral disc space is spared.	Yes between T8–T9 and T10–T11, unknown between other vertebrae
Anterior longitudinal spinal ligament is ossified.	Yes between T6–T10
Extraspinal ligamentous and muscular attachments are prominently calcified (enthesopathies): in the insertion of triceps brachii at the olecranon of the right ulna, ischial tuberosities, iliac crests, pubic symphysis, patella, the patellar ligament at the tibial tuberosity, trochanters, femoral linea aspera, the Achilles’ tendon at the posterior calcaneus.	Present in the insertion of triceps brachii at the olecranon of the right ulna, ischial tuberosities, iliac crests, the patellar ligament at the tibial tuberosity, trochanters, femoral linea aspera, the Achilles’ tendon at the posterior calcaneus
Sacroiliac joint might be fixed by several bony bridges but not by intra-articular bony ankylosis.	No
Ankylosing spondylitis	
Syndesmophytes (ossifications of the annulus fibrosus of the intervertebral disc) are thin and vertically oriented.	No
Apophyseal joints are fused.	No
Bilateral involvement of the sacroiliac joints which commonly fuse.	No
Spinal fusion always begins in the lowest part of the spine and may progress inexorably upwards without any normal vertebra intervening (no “skip lesions”).	No
If the thoracic vertebrae are fused, then it is often found that the costovertebral and costotransverse joints are also fused.	No
No extraspinal bone formation is seen.	It is seen
Fluorosis	
Vertebral ankylosis: lumbar first, later total, central.	No
Thick osteophytes.	No
Narrowing of joint space.	No between T8–T9 and T10–T11, unknown between other vertebrae
Osteosclerotic bone.	?
Dentition: mottling, low rate of caries.	No
Ossification at any enthesis.	Yes
Reactive arthropathy	
Vertebral ankylosis: lower thoracic and upper lumbar. Lateral first.	No
Paravertebral ossification progressing to fusion with vertebral body. Ankylosis of vertebral bodies with “skip lesions”.	No
Asymmetrical sacroiliitis.	?
Erosions in MTP (particularly first) and IP joints of feet.	?
Dentition normal.	Yes
Entheseal ossification predominantly in pelvis, lower limb and feet.	No
Psoriatic arthropathy	
Vertebral ankylosis: lower thoracic and upper lumbar first. May involve cervical.	No
Paravertebral ossification progressing to fusion with vertebral body. Ankylosis of vertebral bodies with “skip lesions”.	No
Symmetric or asymmetric sacroiliitis. Erosions may be present within joint. Sclerosis.	?