Beyond the report: Prospects and challenges in forensic anthropological investigations of structural vulnerability

Ariel Gruenthal-Rankin [a,b,*], Tessa Somogyi [b], Amanda Roome [c], Elizabeth A. DiGangi [b]

[a] Department of Anthropology, Division of Social Sciences, University of Hawai'i- West O'ahu, HI, USA
[b] Department of Anthropology, Binghamton University, Binghamton, NY, USA
[c] Northeast Center for Occupational Health and Safety, Mary Imogene Bassett Hospital, Cooperstown, NY, USA

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ABSTRACT

Forensic anthropologists are increasingly interested in accounting for embodied marginalization in addition to the biological profile. A structural vulnerability framework, which assesses biomarkers of social marginalization in individuals within forensic casework, is worthwhile but its application must be informed by ethical, interdisciplinary perspectives that reject categorizing suffering within the pages of a case report. Drawing from anthropological perspectives, we explore prospects and challenges of evaluating embodied experience in forensic work. Particular attention is paid to how forensic practitioners and stakeholders utilize a structural vulnerability profile within and beyond the written report. We argue that any investigation of forensic vulnerability must: (1) integrate rich contextual data, (2) be evaluated for potential to perpetuate harm, and (3) serve the needs of a diverse array of stakeholders. We call for a community-oriented forensic practice, wherein anthropologists may act as advocates for policy change to disrupt power structures driving vulnerability trends in their region.

1. Introduction

"Humans have an uncanny ability to hold terror and misery at arm's length, especially when they occur in their own community and are right before their eyes." [1].

The embodiment of social marginalization has received increasing attention in forensic anthropological literature (e.g., [2–4]. The disproportionate representation of marginalized people in forensic casework has led to small and large-scale analyses, including the recently published edited volume *The Marginalized in Death: A Forensic Anthropology of Intersectional Identity in the Modern Era* [5]. Recently, Winburn and colleagues (2022a, 2022b-this issue) have proposed a *structural vulnerability profile* (SVP) to accompany the typical biological profile presented within case reports. The purpose of the SVP as implied, though not explicitly stated by Winburn and colleagues [6], is to develop a more nuanced approach to understanding the identities of people within our casework, with a particular focus on experiences of marginalization.

As a holistic team of anthropologists whose individual research programs explore dimensions of embodied life experiences, we certainly join Winburn and colleagues [6] and others (i.e. [3–5,7]), in their call for increased attention to the less visible, daily violence that leads to individuals being incorporated into forensic anthropological casework. When informed by interdisciplinary perspectives, contextual data, and community needs, the development of research based on the SVP toolkit has the opportunity to open a new dimension of understanding in forensic anthropology. However, in its current manifestation, the SVP requires deep consideration before its integration into casework. Specifically, we stress that the objectives of including the SVP within the case report must be outlined explicitly and encourage forensic practitioners to consider potential harms or stigma generated by amplifying an individual's experiences with marginalization. We contend that such consideration is necessary for the ethical application of structural vulnerability frameworks within forensic anthropology.

In their development of the SVP, WInburn and colleagues [6] identify numerous objectives and opportunities for its implementation. These include: the consolidation of skeletal and dental biomarkers of inequality to compare to social and economic stressors; to elucidate associations between biomarkers; to identify embodied social processes and lived experiences; to make legible to forensic stakeholders the embodied effects of social marginalization; and to reject biologically deterministic views of human variation. We agree that such objectives are valuable and would allow for a more humanistic and bioculturally informed perspective, both among practitioners and stakeholders.

However, we also believe that the benefits and the drawbacks of the SVP approach should be thoroughly explored prior to implementation.

Here, we examine a holistic anthropological background on embodied structural violence as a lens for evaluating the prospects of the SVP, while also considering the substantial challenges inherent to studies of structural vulnerability in forensic contexts. From these challenges, we propose the following criteria that are critical for the incorporation of SVP into forensic work: (1) explicitly stated goals with regard to how structural vulnerability data will be used in analyses of caseloads and in research endeavors, (2) the integration of contextual data, ranging from that at the recovery scene to regional and historical trends, in generating or analyzing SVPs, and (3) recognizing the importance of utilizing our anthropological training and forensic perspectives as a springboard for advocacy and community-oriented practice. Critically, we argue that ethical applications of the SVP toolkit must center on identifying harmful power structures and community-level action, rather than generating knowledge confined to the case report or journal article. The identification of vulnerability on the individual case level may continue to perpetuate harm for the deceased and their living community networks if vulnerability data is not utilized for advocacy or to initiate structural change.

2. Anthropological perspectives on the embodiment of structural violence

2.1. Medical anthropology

Galtung's oft-cited concepts of structural violence and the *triangle of violence* [8,9], which identifies the way in which cultural, structural, and direct violence interact, have oriented much of the anthropological research and literature on embodied violence. Medical anthropologists have dealt with these dimensions of violence for decades, often within the context of health outcomes. Paul Farmer and colleagues [10] note the importance of assessing structural violence to describe the large-scale social forces that leave an individual/population more vulnerable to negative health outcomes. While these social forces are often out of the control of the individual/population, they are not necessarily beyond the reach of medical anthropologists, clinicians, and other professionals, who can develop structural interventions.

As an example, Farmer used the Partners in Health (PIH) model of care to design an intervention in rural Haiti to prevent structural violence (in the form of poverty and social inequalities) from creating excess mortality as a result of AIDS, tuberculosis, malaria, and other diseases of poverty. By identifying the existing clinical and community boundaries and making diagnosis and treatment available for free to individuals living in poverty, mortality rates were decreased. AIDS care was delivered at clinics, but also within villages through *accompagnateurs* (often neighbors) who would deliver drugs and supportive care to patients [11]. The PIH model was also similarly used to great success in Rwanda, showing that interventions can be very effective at mitigating negative health outcomes and addressing structural violence within communities [10]. Medical anthropology has identified that best practices for health interventions are often conceived when clinicians and medical anthropologists work in conjunction to address both the clinical and social drivers of illnesses.

2.2. Bioarchaeology

The application of structural violence frameworks to bioarchaeological research has resulted in increasingly contextualized studies which explore the lived and post-mortem experiences of individuals [12,13]. As in medical anthropology, bioarchaeological studies of structural violence are deeply rooted in socio-political frameworks of the communities within which past people lived [14]. In her overview of applications of structural violence frameworks in bioarchaeology, Bright [14] identified three main categories of research:

(1) direct physical violence (see [15,16], (2) health inequalities (see [17–19], and (3) anatomical collection formation and post-mortem examination (see [12,20–23]).

Arguments developed from the analysis of structural violence in skeletal collections have emphasized the essential role of contextual information in the interpretation of lived experience. We believe this aspect of structural violence research in osteology is crucial for the development and implementation of an SVP toolkit. Fundamental to these studies is the way in which structural violence leads to anonymization and dehumanization of deceased people. Lans [22] focused on the remains of Black women who are now curated in the Huntington Collection, examining archival data in conjunction with traditional biological profile data. She discusses the "mutilated historiocity" of these women, in which both the archives of their lives and deaths as well as their physical bodies have been disarticulated and fragmented by racist structural violence ([22]: 33; after [24]). Watkins [12] has argued that approaches prioritizing or focusing only on skeletal remains without contextual data produces scientific knowledge instead of population-sample knowledge, further perpetuating the effects of structural violence and unethical treatment on these individuals. An ethics driven, context-laden approach would benefit forensic analyses of structural vulnerability, particularly with regard to the high number of unidentified people within coroner and medical examiner's offices across the US [3].

The above examples represent a small fraction of the anthropological research conducted within a structural violence framework; a more detailed discussion is beyond the scope of this paper. However, we believe the applicability to forensic casework and research is clear; cumulatively, these studies demonstrate that the effects of structural violence continue even after death, both for the deceased and their descendant communities. Until recently, forensic anthropological research has only begun to seriously consider structural violence. Among others, a notable exception to this is the ongoing work of Jared Beatrice and Angela Soler, who have argued the need for increased focus on the embodied effects of structural violence among undocumented migrants as well as US nationals (e.g., [2]). The overall paucity of research into structural violence is particularly concerning given the disproportionate representation of socially marginalized individuals in domestic forensic casework. The Winburn and colleagues [6] SVP toolkit attempts to address this issue through the evaluation of a variety of skeletal biomarkers linked to physiological stress and lived experience.

3. Prospects of a structural vulnerability profile toolkit

3.1. Potential to add nuance to the forensic case report

The investigation of structural vulnerability has the potential to generate additional depth in forensic anthropological case reporting. This added nuance is qualitative in nature and echoes the use of osteobiographies in bioarchaeology. Osteobiographic approaches were first introduced by Saul [25] with the intention of creating a holistic narrative of a single past individual's life rather than the large statistically informed, population-level approaches that are traditionally characteristic of bioarchaeology. These narratives include qualitative data and can be considered complementary to traditional population-level analyses [26]. Similarly, the SVP is well-positioned to be applied in a complementary fashion to our casework, potentially as a way to develop a more complete idea of individual lived experience.

However, insights from bioarchaeology provide a cautionary note when considering the application of an SVP within a forensic case report. Hosek and Robb [26] indicate that how data is used or analyzed in the osteobiography is the least developed methodological component of the approach and our questions surrounding the application of the SVP seem to parallel this observation. It remains to be seen if the added nuance to casework will result in increased identifications of unknown individuals, but the prospects of SVP toolkit use may lie primarily in

research design and caseload analysis. Below, we discuss the ways in which the SVP toolkit may be utilized to develop stronger methods to account for all within our communities, allowing forensic anthropologists to add their voices to advocacy work while developing community-driven research.

3.2. Development of inclusive, intersectional research

Central to any investigation of structural vulnerability and violence is explicitly identifying the power structures that affect individual and community well-being. As Winburn and colleagues [6] note, shifting the focus from individual responsibility for social determinants of health to the structures that reinscribe this violence is an important dimension of addressing harm. The SVP toolkit, as well as other frameworks within bioarchaeology and medical anthropology, may be used to formulate research that addresses structural violence in the design phase. The toolkit provides avenues for the development of more complex post-report submission case tracking and the analysis of trends in our casework that speak to needs within our communities.

Research design guided by pre-existing trends in structural violence within our communities is set apart from research which explicitly tests hypotheses related to quantifying harm and impairment (e.g., scales or indices) or distinguishing the vulnerable from the less vulnerable. Such approaches highlight suffering, flatten individual lived experiences and agency, and center particular groups as "control" or "default." Ethnographic accounts from people with disabilities as well as bioarchaeological investigations of impairment, provide insights into the problems with such normative assumptions about bodies and health. For example, in their ethnography of persons with disabilities within an Israeli rehabilitation center, Agmon and colleagues found, unsurprisingly, that participants were frustrated by the reduction of their personhood to their disability, as well as the reinforcement of a "healthy-disabled" binary ([27]: 1).

As forensic practitioners, the risk of reducing individuals within our research to the sum of their suffering runs counter to the goal of examining structural vulnerability, wherein the aim is to construct more fully an individual's lived experiences and identify harmful power structures.

4. Challenges in the application of a structural vulnerability profile

4.1. Characterizing "health" and stress in the skeleton

Bioarchaeological interpretations of "health" and stress in the skeleton are particularly informative as tools like the SVP are developed within forensic anthropology. Longstanding discussions in bioarchaeology have focused on our ability or, more accurately, inability to quantify health from skeletal remains [28]. Health is fluid and multifactorial, encompassing a wide range of factors that may be visible (e.g., lesions associated with physiological stress) and invisible (e.g., individual perception of health) within the skeleton. Even within contemporary contexts, we lack critical contextual data to fully assess an individual's health or nutritional status from their skeleton [28,29].

Indicators of physiological stress, including linear enamel hypoplasia, oral pathologies, and porotic lesions, among others, have been used individually and cumulatively to speak to embodied experience as well. Frailty indices, which measure the cumulative effects of lived experience to evaluate risk of disease and death, are commonly utilized in biocultural interpretations of well-being [30–32]. These share some similarities with the SVP toolkit that speak to the 'weathering' or allostatic load that is central to the SVP approach [6,33]; however, we caution against the use of a scale system with the SVP toolkit to avoid what would amount to the comparison of levels of suffering across groups of people.

Additionally, practitioners should carefully consider the interpretation of skeletal lesions and their assumed relationship to adverse health experiences. As Wood and colleagues [34] pointed out nearly thirty years ago, presence of skeletal lesions does not equate to poor health. An understanding of human biology and pathophysiology, which focuses on how and under what circumstances pathological conditions develop, is critical to properly characterize signs of physiological stress in the skeleton. McFadden and Oxenham [35] describe the presence of cribra orbitalia, porosity of the upper orbit linked to various anemic conditions, as representing health compromises in early life. These early-life lesions may result in increased frailty in later life; however, they can alternatively represent resilience in withstanding initial physiological insults which may be associated with higher levels of immunocompetence or even trade-offs related to local disease ecology [36].

Consideration of resilience, both individually and on the community level, is crucial within a structural vulnerability framework. This is particularly true when considering embodiment in the skeleton, where the relationship among physiological stress indicators and "health" is not linear [28]. Additionally, in both applied and academic forensic practices, the foregrounding of particular experiences as "healthy" or "typical" and other experiences as "unhealthy" or "atypical" without the nuance of resilience, regional and historical trends, and mitigating circumstances is problematic. In their survey of anemia status, economics, and health within Mexican households, Piperata and colleagues [37] found: (1) anemia status was often not shared within a household (i.e., not all individuals within a household were anemic), (2) anemia status was a poor predictor of economic status, and (3) nonanemic individuals were more likely to report self-perceived poor health than those with anemia. The authors cautioned osteologists in particular against the assumption that presence of lesions commonly attributed to anemia (i.e., porotic hyperostosis or cribra orbitalia) can be used as a sign of poor health on the individual or household level, or as an indicator of low socioeconomic status [37]. While experiences like migration, houselessness, or addiction certainly affect the body physiologically, the relationship between lived experiences and stress markers in the body is less than straightforward.

4.2. The misuses of vulnerability

Medical anthropologists have long emphasized the danger in simply documenting structural vulnerability. Farmer ([38]: 26) notes "… writing the plight of the oppressed is not a particularly effective way of assisting them." As anthropologists, we have a deep history as tools of the oppressor, conducting studies that directly or indirectly have served to other and perpetuate structural violence. This history is not as distant as it may seem. In their critique of contemporary ancestry assessment methods, DiGangi and Bethard [39] hypothesize that anthropological assessments of ancestry may influence resources allocated to the investigation of a missing or murdered individual if they belong to a socially marginalized background. Explicit and implicit racial, class, and gender bias within the judicial system may be exacerbated by the use of the SVP within the case report; this is especially true without action beyond the report. Ethically, we must interrogate the ways we become complicit in structural violence when we classify vulnerability without taking efforts to address harm within our communities.

Fortunately, several authors have demonstrated a path forward in balancing our ethical responsibilities with research into socially marginalized people. For example, research on pre- and post-operative facial feminization surgery, conducted by an interdisciplinary team of researchers, has centered not only the experiences of transgender women but also taken a step toward improving identification for those who have participated in gender confirming surgery [40]. Similarly, Tallman and colleagues [41] have called for increased attention to gender diverse people in our casework, discussing skeletal evidence of gender affirming surgeries that may be visible on the skeleton. Finally, research regarding the identification of undocumented migrants along

the US-Mexico border demonstrates integration of structural violence theory domestically within our field (e.g., [2,7]).

4.3. Integration of contextual data in the SVP

The lack of consideration of recovery scene, regional, and historical data is a drawback of the SVP approach as conceived by Winburn and colleagues [6]. Medical anthropologist Margaret Lock [42] argues for the concept of "local biologies" which account for temporal and spatial components of identity that are inexorably linked to embodiment. This contextualized approach to lived experience has recently garnered attention within human biology and osteology, particularly for researchers focused on biocultural practices [43]. The inclusion of forensically relevant contextual data allows for theorizing of local biologies on a regional level for forensic casework.

Contextual details could be sequentially unmasked to prevent bias in case analysis while allowing for more nuance in evaluating vulnerability using the SVP toolkit [44]. Rich contextual integration could also be utilized alongside the toolkit in post-case report submission with the goal of analyzing the unique trends and needs within the communities we work. In their survey of forensic anthropology practitioners' work with transgender individuals, Tallman and colleagues [41] note that because the majority of transgender individuals do not undergo surgical procedures, the analysis of other contextual indicators is an essential line of evidence in the identification of transgender individuals. While the authors advocate for a biocultural approach to forensic casework as a way to be more inclusive of gender diverse people, we believe such inclusivity through the thoughtful inclusion of contextual information when appropriate, benefits all individuals we serve through our casework [41].

In drawing once again from bioarchaeological analysis, it is clear that contextual and archival data possess great potential to reveal dimensions of structural vulnerability that are lost in skeletal-only analyses [12,21,22]. The evaluation of local, regional, and historical trends in our caseloads would help practitioners identify structures and policies that increase risk for socially marginalized people dying alone or being at higher risk for homicide. These data are unique to forensic anthropology and thus represent a strong line of evidence that can be contributed to policy making.

Expanding beyond material context, we contend that the addition of regional data to the SVP toolkit would enrich our analyses of case trends after reports have been submitted and aid in the identification of harmful power structures that contribute to vulnerability. Regional data would describe the specific geographic context in which an unknown individual was recovered. These geographic contexts could be known migrant corridors, many of which have been established through dangerous political policies [45–47], or areas with vacant homes and/or houseless encampments, which may reflect areas within a city where resources have been withdrawn or redirected elsewhere [4].

Finally, the third level of contextual data is temporal and requires a consideration of historical data to identify structural processes that affect the contemporary populations to which an individual may have belonged. This is reflective of Lock's [42] concept of local biologies and is central to interpreting individual biomarker expression (e.g., the intergenerational transmission of historical trauma through early-life stress markers) as well as regional caseload trends. As an example, Byrnes and colleagues [48] investigate how Hawaiian populations have been affected by and responded to the processes of settler colonialism, military occupation, and capitalist exploitation. Among the houseless in Honolulu, individuals who have historically experienced these processes are "Local" and exist as part of a highly interconnected community; membership within the Local group has been shown to confer protections against dying alone and represents a source of community resilience. This is contrasted with White houseless people who are often considered non-Local and represent one of the most at-risk groups with regard to being integrated into forensic casework [48]. Without

knowledge of specific regional and historical experiences, a forensic practitioner might erroneously conclude that people experiencing houselessness who are Local and have experienced colonization, racism, and other oppressive power structures, would be most at risk. This assumption may lead us to fail to meet the needs of the communities within which we work, may cast all houseless people as having a similar lived experience, and mask resilience within historically marginalized groups.

Together, case-specific, regional, and historical data challenge forensic anthropologists to move beyond the biological profile and consider non-skeletal lines of evidence during and after case reports are constructed.

5. Toward a public forensic anthropology

Scheper-Hughes [1] notes that distance from the people in the communities within which we work has been a driving factor in the apolitical stance that so many anthropologists have taken across time. Today, forensic anthropology is confronted with a similar reality. As a means of addressing the power structures that underlie any investigation of structural vulnerability we see within our casework, we develop a call for a public forensic anthropology practice that addresses structural needs of our communities. This begins with careful consideration of who our current community stakeholders are and who they could be in the future.

Stakeholders who are commonly identified in forensic anthropological literature include members of the medicolegal field (e.g., coroners/medical examiners, members of law enforcement, lawyers, judges, and jurors) and occasionally, immediate next-of-kin [6]. These individuals are distinct from the diverse stakeholders most forensic anthropologists interact with in international human rights contexts. Following international anthropological work and collaborations occurring along the US-Mexico border (e.g. [47]), we argue that an expanded understanding of who "counts" as a forensic stakeholder may better reflect the unique needs of our regions. We advocate for the inclusion of non-governmental organizations and state task forces focused on missing persons or at-risk populations, community elders, families and their support groups, and houseless advocacy groups (among others) to better understand risk in our local communities.

In developing community-level public health interventions, Farmer and colleagues [10] describe how diagnostic and therapeutic tools can be used on both 'proximal' levels (e.g., vaccinations to prevent illness), or 'distal' levels (e.g., interventions performed after an individual becomes ill). Historically, forensic anthropologists have been most often involved in 'distal' processes including investigation after individual deaths, human rights violations, or disaster. In the spirit of holism that is so foundational to our field, we suggest that broadening our scope to proximal interventions is also a worthwhile endeavor. Echoing the sentiments of our colleagues [3,49], we believe that both academic and applied forensic anthropology can and should include advocacy and activism, to the extent that our organizations and time constraints allow. In doing so, forensic anthropologists can position themselves to assist in disrupting the processes of structural violence within our communities [10].

Envisioning a public forensic anthropology could include proximal interventions, such as the use of caseload data to guide policy advocacy, collaborative community-led research programs which include ethnographic perspectives, and application for joint grants with community stakeholders to better support the regional processing and tracking of missing persons cases. Distal and intermediate interventions also fall within the framework of a public forensic practice, which would allow for participation in task forces dedicated to high-risk groups, including those dedicated to Missing and Murdered Indigenous Women and Girls or missing or unidentified transgender and gender diverse people [50–52].

Our anthropological training uniquely allows us to move among

stakeholder groups at various stages of intervention. As Soler and Beatrice [53] note, families living in other countries or those who are undocumented within the US are less likely to approach law enforcement regarding their missing relatives or contribute DNA to missing persons databases. Our ability as anthropologists to collaborate within communities to collect missing persons data is an underutilized skill within domestic forensic anthropology, although these skills are often employed in international settings and along the US-Mexico border [53, 54]. We are also well positioned to work with families of missing persons and law enforcement to lower the rates of social race and gender misclassifications within missing persons databases. Database misclassifications of social race have been highlighted as a particular issue in the Missing and Murdered Native Hawaiian Women and Girls epidemic [50]. Cristobal [50] notes that ongoing colonization has led to Native Hawaiian ancestry being conflated with other social race categories including "Other Pacific Islander" or "Asian" within databases. These errors have led to difficulty in disaggregating social race data to grasp the scope of the crisis for missing and murdered Native Hawaiian women and girls.

6. Conclusions

Watkins and Muller [21] note that scientific inquiry is neither objective nor passive in nature, and that research in human biology requires a knowledge of social justice issues and scholarship aimed at addressing and ameliorating these issues. Several forensically-relevant crises are occurring within the US today, including the epidemic of missing and murdered Native American, Alaska Native, and Native Hawaiian women, girls, and two-spirit people, and the ongoing humanitarian crises of migrant deaths along the US-Mexico border [3,47, 55]. Following Watkins and Muller [21], we view engagement with structural violence frameworks as a non-passive approach to forensic science, which can affect change through our scholarship and community involvement.

Ethical questions remain about the use of the SVP in forensic anthropological casework, especially when considering the use of this information by medicolegal stakeholders and the effects of investigational and reporting bias (e.g., Missing White Woman Syndrome) [56]. The prospect of further stigmatizing people who have experienced marginalization in life should be at the forefront of our minds as anthropologists engaged in an ethical practice of social justice work. However, we believe that the utility of the SVP toolkit for research design and caseload analysis is much stronger. Integration of robust contextual data, consideration of local biologies and community resilience, and an engaged, public-facing forensic practice would enhance the SVP toolkit, allowing it to better address the needs of our diverse forensic stakeholders.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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