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Priscus & The Huns - The Representation of "The Other" in History by Amaris Wen

In the ancient texts of the Byzantines, ethnography, the study of foreign peoples, formed a relatively coherent genre (or subgenre) as scholars and historians wrote in classical Greek about the complex international scene of competing and emerging cultures at whose center stood the Christian Roman empire. Widely cited in Byzantine sources, the greatest part of Priscus' work is found in the Excerpta de Legationibus, where his fragmentary history provides a detailed account of the struggle between the Romans and Attila the Hun. Of particular value is Priscus' first-hand account in Fragment 8 of an embassy to Attila in 449 to discuss the exchange of fugitives in which Priscus himself served as an assistant to Maximinus, leader of the diplomatic mission sent from Constantinople. In his documentation of his observation along his journey, Priscus' not only discussed diplomatic matters but explored the social and cultural aspects of Hunnic society through his interweaving of historical and ethnographic themes. These records, however, not merely served as a chronicle of events and reports of observed facts, but also a system of representation of a foreign people. So, when drawing from Priscus' depiction of the Hunnic lifestyle, instead of simply reading it as straightforward unproblematic ethnographic descriptions, it's important to evaluate to what extent did the knowledge presented engagement in real experience and to what extent were they fantasies filtered by the Roman perception in an attempt to qualify "alterity". Upon a close read of Priscus' Fragment 8, we see this historical ethnography as an invaluable source in understanding the sophistication of a nomadic society but also a work where the veracity is constrained by the author's cultural frameworks and political agendas.

It should be acknowledged that, unlike his predecessors, Priscus had made the Huns into full-blooded historical agents, not just simply into a negative mirror of Roman virtue. The actuality and accuracy of his account of the Huns, therefore, indicate a gigantic leap in the historians' ability to relate to foreign peoples.

Priscus does not indulge in the type of historical fiction that we find in Ammianus, the contributor to the earliest systematic description of the Huns. In Ammianus' book *Res Gestae* from 395, he referred to the Huns as "a race savage beyond all parallel". Ammianus gives a physical description of the Huns as "the cheeks of their infant children are deeply marked by an iron… and accordingly, they grow up without beards, and consequently without any beauty…

though they all have closely knit and strong limbs and plump necks; they are of great size, and bow-legged." He points out what he believes to be their lack of personal beauty and put emphasis on beastly, primitive attributes. He also describes the living practices of the Huns by saying that Huns "are so hardy that they neither require fire nor well-flavored food, but live on the roots of herbs as they get in the fields, or the half-raw flesh of any animal, which they warm by placing it between their own thighs and the back of their horses," further accentuating the "uncivilized" nature of the Hunnic lifestyle.

Information Ammianus had about the Huns consisted only of garbled descriptions of the visual appearance of customs that he lacked the cultural background to interpret properly. By comparing the foreign people to animals and representing them as subhuman, Ammianus establishes an antithesis between the "civilization" and the "uncivilized", placing the Romans and the Huns on the two extremes of a spectrum.

Priscus, on the other hand, did not dehumanize the Huns and depict them as the empire's barbaric, morally degenerated foes, as Ammianus had done in the previous century. He provides us with a relatively accurate and detailed account of Hunnic activity and practices, presenting the Huns not as the beast, but a unique group that had table manners, food culture, and habits of their own.

His writing provides an indication of his attempts to understand the Hunnic cuisine, as he carefully describes the food culture "in the villages" that supplied the envoy with food. Specific references are made to the foods' local names and their ingredients: "……millet instead of corn, and mead, as the natives call it, instead of wine……and a drink made of barley, which the barbarians call kam."

Priscus then perceptively went on to depict horses, the animal of paramount importance in the nomadic culture, not merely as a means for transportation but an integral part of the Hunnic lives. He accurately draws a distinction between "the boats the barbarian row (the envoy) across the river in" and horses. While the practical usage of boats was simply brought up in a brief remark of events, the horses are presented as an instrument not just with practical but also of cultural value. Priscus mentioned observing Attila eating "as he sat on his horse" with "his attendants raising the tray to his saddlebow." Such descriptions give us a glimpse into Priscus' understanding of the nomadic tradition.

Furthermore, Priscus' profound understanding of the nomadic social organization is evident in his account of a banquet he attended during his journey:

"......when the viands of the first course had been consumed we all stood up, and did not resume our seats until each one, in order before observed, drank to the health of Attila in the goblet of wine presented to him......two barbarians coming forward in front of Attila sang songs they had composed, celebrating his victories and deeds of valor in war."

From the references to Hunnic table manners in the account of the banquet above, we see the worship of the leader at the core of Hunnic values. In the Hunnic society, the cult of a strong, heroic leader was inextricably linked to the nomadic social organization. The Hunnic society relies on the authority of its leaders for social cohesion, which is determined by the looseness of its nomadic social organization. Priscus' ability to grasp and interpret the social arrangements of the foreign people marks significant progress from the previous Roman accounts where nomadic societies serve as chaotic and beastlike counterparts of the complexity and organization of the Roman society.

When examining the intricate details in Fragment 8 that make accurate references to the Hunnic culture, it's evident that Priscus' account mirrors an effort to look at an alien culture sympathetically, endowing them with individuality and provides a well-informed, sensitive record of the complexities of the nomadic society.

Priscus, indeed, was an observant and open-minded traveler; however, his national pride and ethnocentric viewpoints do lurk out in his records. Throughout the account of his envoy in Fragment 8, we see Priscus putting particular emphasis on small details that indicate the Roman influence on the nomadic culture.

Due to the relatively hostile military, political and diplomatic relations, the cultural exchange between the Huns and the Romans at the time was generally limited to the material culture and language. Priscus' description of Roman cultural influence towards the Hunnic society, therefore, focuses primarily on these aspects.

When observing the Hunnic residence, Priscus noted specifically that the Hunnic nobleman Onegesius modeled himself on the Romans by building baths. "Not far from the enclosure," Priscus recorded, "was a large bath which Onegesius – who was the second in power among the Scythians --- built, having transported the stones from Pannonia." Baths and the bathing culture were some of the defining symbols of the Roman civilization. By emphasizing

the bath's status as the only stone building in the Hunnic residence, and the laborious effort of a high ranking Hunnic official in using "imported material" for the architecture that presumably served as a public display of wealth and prestige, Priscus implicitly expresses a sense of national and cultural pride.

Priscus also noticed that "sending gifts" was an important way for Roman material culture to spread into the Hunnic society, especially among the upper classes. The gifts given by the Maximinus mission to Bleda's widowed wife "consisted of things which are esteemed by the barbarians as not produced in the country--three silver phials, red skins, Indian pepper, palm fruit, and other delicacies." Priscus' stressing of the gifts as "esteemed by the barbarians," reflects a certain degree of his confidence in the "superior " Roman civilization.
In addition, Priscus observed how the Roman language and values of the Romans had some influence on Hunnic society. By Attila's time, some Huns could communicate in Latin, "but no one could speak Greek with ease". Attila used "a mixture of Hunnic and Gothic Latin" at a banquet in honor of Maximinus' delegation. Priscus even stresses the fact that some Huns were able to use Latin. For example, Priscus records a detail at the welcome banquet. "When I was astonished that Attila was paying particular attention to one of his sons and neglecting the others, a barbarian official sitting next to me, who knew Latin, explained to me......"

Priscus also recorded a case of court ruling during his journey, which may result from unconsciously emphasizing the docking of the legal concept between the Huns and the Romans and deliberately highlighting the influence of the Roman legal concept on the Huns' society. Priscus, at Attila's court, sees "him (Attila) standing before his house, accompanied by Onegesius, and many petitioners crowding round to receive his judgment." Attila's decision on disputes might be understood from the perspective of the Huns as a result of the traditional leadership authority of the nomads. Priscus, on the other hand, uses technical concepts such as "litigation" and subjectively adds a layer of legal concepts from the perspective of the Romans. As a member of the elite class of Roman civilization, Priscus' account of the Hunnic society to an extent represents the general mindset of the Romans when they faced the nomadic Huns from the inland steppe of Asia. Priscus, limited by his time, his educational background, and the historical memory of the Roman state, looked at the Huns from the traditional Roman perspective. Roman culture was placed at the center of Priscus' interpretation of the Huns,

leading to an exaggeration of Roman influence on Hunnic lifestyles and the filtering of Hunnic culture through the lenses of Roman standards and expectations.

Apart from the biases in Priscus' interpretation of the Huns, it's also important to notice that some information in Priscus' account was designed to score points in internal Roman debates and not primarily to present objective information about foreigners. One of the prominent examples of such cases is Priscus' description of an encounter with a Graikos (Greek Speaking Roman), who had been taken captive by the Huns but later chose to live among them when his master set him free for "he considered his new life among the Skythians better than his old life among the Romans."

The encounter with the Graikos enables Priscus to stage a debate on the ideals and practices of Roman politeia. The Graikos attacks the way in which the politeia operates in practice, stating that "the condition of the subjects in time of peace is far more grievous than the evils of war, for the exaction of taxes is very severe, and unprincipled men inflict injuries on others because the laws are practically not valid against all classes." Priscus, on the other hand, defends the rationale behind many of its arrangements, conceding that they do not always work as intended. At the end of the discussion, the Graikos concedes that in theory, the politeia is good, but it is being ruined by the people in charge of it.

Although there seemed to be kernels of truth in most of Priscus' descriptions of the Huns, most scholars suspected that the entire exchange of Priscus and the Graikos was fictional. Priscus has likely either invented him entirely or developed an accidental encounter in order to make a more general statement. The presence of a viable "Other" allows Priscus to dig deeper into his analysis of the structure of his own society. By contrasting the officious weight of the late Roman bureaucracy with "barbarian peacefulness", the idyllic life of remote peoples and the corrupted civilization, Priscus manipulates the traditional opposition of the Roman and the barbarian and in order to air his own criticisms of the Roman state without compromising his loyalty to his nation.

Therefore, it seems that Priscus allowed the balance of his ethnographical account to be greatly influenced by his own political interests. The ethnographic accounts, on some occasions, become an instrumental model of covert self-reflection. They exist to encourage Roman readers to think more deeply and critically not about the barbarian societies but their own. The account of the foreign peoples, as a result, are often resorting to fiction to achieve such a goal.

In conclusion, while Priscus' work did represent the Huns as a sophisticated society and culture that weren't simply the stereotypical image of the "uncivilized" serving as an antithesis for Roman civility, his representation of the Huns in the ethnographic accounts were largely influenced by his Roman perspective and political motives. Historical ethnography of the nomads like Priscus' is more a system of representation that speaks to the political goals of the author than the "realia" of the subject matter. The creation of these ethnographies was a process in which the historians collect relevant material and "rationalize" the phenomenon in terms of the macro scheme history of their civilization. Nevertheless, value still lay in the ethnographies, as studying Priscus' ethnography gives us a glimpse of who the Byzantines themselves were, or thought they were, in relation to the wider world they inhabited.

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Has The 'Construct of Gender' Been More Beneficial or More Harmful to Humanity Throughout History? by Amaris Wen

Introduction

From independent episodes of cruelty and violations to the collective and systematic killing of people from other groups, humanity has proven throughout history that it has the physical ability and mental capacity to exert terrible violence upon its own species.

This essay explores the gendered aspects of human violence by evaluating the construct of gender. It will primarily explore this violence in terms of the dualistic male-female model of gender and how that model has acted as a destructive force of division throughout history, creating societies primed for conflicts and brutality. In other words, how the construct of gender became a contributing factor in enabling humanity's "inhumanity."

The following discussion focuses on establishing the construct of gender as a thread that links human violence at different points on a scale. That scale reaches from the private and individual to the public and collective, from domestic violence to total warfare, from the physical to the structural and symbolic violence,[1] on the basis that the relationship between conflict and gender has been grounded in correlations, rather than causations.

Gender as Violence Enticing Norms

It has long been established that gender construction is more than simply biological. It is one of the most culturally significant, shaped, regulated, and symbolic of all human constructs. While the anatomical and biological differences between male and female serve as the genesis for gender, the notion of gender refers to the social and cultural differences assigned to different groups of people. According to West and Zimmerman, the construct of gender is "an emergent feature of social situations: both as an outcome of and a rationale for various social arrangements, and as a means of legitimating one of the most fundamental divisions of society."[2] Being one of the fundamental social arrangements, "gender power is seen to shape the dynamics of every site of human interaction, from the household to the international arena."[3]

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[1] Cockburn, Cynthia and Dubravka Zarkov 2002 (eds.). *The Postwar Moment. Militaries, Masculinities and International Peacekeeping: Bosnia and the Netherlands.* London: Lawrence & Wishart.
[2] West, C'/D.H. Zimmerman (1987): Doing gender. In: *Gender and Society* 1. S. 167-190.
[3] Cockburn, Cynthia 2001. *The Space Between Us. Negotiating Gender and National Identities in Conflict.* London, New York: Zed Books.

The construct of gender is socially situated and includes social norms and roles associated with being a woman and a man. When discussing the concept, the functionalist scholars often trace back to the pre-historic hunter-gather societies, where the gendered division of labor enabled the two sexes to perform tasks suitable for their physical capabilities. After a closer examination of the development of this construct in history, however, we see its influences go beyond behavior expectations and extend into political and symbolic applications that, in contrast to the alleged claims of some scholars of promoting social solidarity and maximizing human productivity, are proven by historical evidence to be more destructive than beneficial. As a result, rather than focusing on the genesis of, or justification for differences between the genders, the more important question should concentrate on how those differences are used to create societies primed for violence.

According to Johan Galtung's theory of violence, cultural, structural, and personal violence are the three corners of a violence triangle.[4] Therefore, before delving into the specific acts of violence and war, we shall first explore how the construct of gender plays an often unrecognized role in constituting the underlying cultural and social norms that legitimize and facilitate violence.

Although gender is a social construction that varies over time and across cultures, gender is persistently used as a benchmark in almost all societies to determine access and power—a supposedly biological-based and functional rubric under which the unequal distribution of power and resources is justified and maintained. Throughout history, we see the access to education, wealth employment, political representation, differing in a huge degree between the two genders. The unequal power levels and subsequently unequal life opportunities brought on by the social construction of gender are demonstrations of structural violence. Many scholars have argued that such an environment of structural and cultural inequality promotes the use of force, resulting in a greater likelihood of conflict both at the interpersonal and international levels.

To illustrate, through socialization and gender stereotyping, masculinity in many cultures is linked to the "power of violation," whereas femininity is "open to vulnerability."[5] The characteristic male attributes often involve more aggressive concepts such as ambition, pride, and competitiveness, while female attributes lean towards passive concepts such as being

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[4] Johan Galtung, *"Structural and Direct Violence,"* 115.

[5] Sauer, Birgit 2009. Staatlichkeit und Geschlechtergewalt, in: *Gundula Ludwig, Brigit Sauer and Stefanie Wöhl* (eds.). *Staat und Geschlecht.* Baden-Baden: Nomos, 61-74.

sensitive and attentive. The disparity in the gendered attributes constitutes a power dynamic. This cultural and structural power dynamics imbue people's worldviews with the idea that violence is righteous and inevitable, endowing the male group with the "right of violence and domination." Consequently, through the process of socialization, these gender roles create and sustain structural inequality and systematic exploitation that becomes a standard part of the social order. Gender construction, thus, becomes a multifaceted aspect of discrimination in which structural and cultural violence of one group against another is institutionalized.

In societies highly segregated by gender, gender relationships sometimes are seen as hostile or oppositional, with one of the genders (usually female) viewed as potentially threatening. The externalization of this underlying insecurity brought about by the segregation of gender roles can be seen in parts of the Islamic world where women are required to wear veils in an effort to eliminate the alleged dangerous, enchanting force females possess. As a consequence, the construct of gender is accompanied by a sense of underlying separation, power imbalance, and insecurity.

The discussion above demonstrates how the construct of gender promotes malignant norms of domination and subordination that thrive on social conditions like exploitation, repression, and discrimination.[6] In return, the prevailing gender model sustains systematic inequality that solidifies a worldview that is competitive and divided rather than cooperative. It does this by providing the framework for justifying intransigence and violence[7], setting the stage for the acceptance of division, intolerance and conflicts as "natural."

Gender and Violence on the Personal Level

The promotion of segregation and violence that results from the construct of gender is evident in abundant cases on a personal level. Through gender dynamics, societies develop intricate, symbolic structures that "allow" the use of violence on an individual level. In most cultures, the ability to use violence is attributed to the male gender. As a corollary of the gendered distribution of power, women are five times less likely than men to domestically assault their partner and suffer more repeated and systematic violence, severe assault, injuries,

[6] Ibeanu, O. 2001 "*Healing and Changing.*" In The Aftermath: Women in Post-Conflict Transformation, edited by S. Meintjes, A. Pillay and M. Tursher, pp. 189–209. London, UK: Zed Books Ltd.
[7] Schwartz, S. 1996 "*Value Priorities and Behavior: Applying a Theory of Integrated Value Systems,*" in C. Seligman, J. Olson and M. Zanna, eds., The Psychology of Values: The Ontario Symposium, 8, pp. 1–24. NJ: Erlbaum.

and hospitalizations than men.[8] Outside of the domestic sphere, incidents of male violence are also significantly more prevalent than female violence. According to the National Crime Victimization Study sponsored by the U.S. Department of Justice in 2007, 75.6 percent of all offenders in violent crimes were male.

The gendered power dynamic consolidates male dominance, and the implicit polarization and antagonism between the two genders, caused by the distinct disparity between femininity and masculinity, created social anxiety. As the construct of gender became so deeply ingrained into an individual's social identity, the right to utilize violence became a means of enacting individuality. For example, violence has been a significant resource for "re-establishing" male identity in a situation of crisis and when traditional concepts of masculinity have been devalued. The reassertion of masculine identity after crises is a potent explanation for the high level of domestic violence in the post-world war eras, where demobilization and unemployment lead to higher rates of violence that men use to re-establish their dominant positions. Furthermore, the wars in former Yugoslavia and Rwanda in the early 1990s brought international attention to the symbolic meaning of wartime rape. The acts of rape and sexual assaults are widely seen as an assertion of hegemonic masculinity, and they have become an embodiment of "conquest and power."[9]

Gender and Conflict on a Collective Scale

The violence-inducing implications of the construct of gender extend far beyond the individual cases. They play a significant role in intrastate and international warfare. This section shall explore conflict with the perspective that violence is a highly gendered activity and that the construct of gender can be used to provoke and justify war.

According to M.Caprioli's *Primed for Violence*, a strong sense of group identification with a concomitant in-group/out-group distinction increases the likelihood of violence and is necessary to mobilize groups towards collective action. The dichotomy between men and women is an integral aspect of nationalism. "Throughout the period of state-building in the West, nationalist movements have used gendered imagery that exhorts masculine heroes to fight for the

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[8] Gene Feder and Lucy Potter 2017. *Why Gender can't be Ignored When Dealing with Domestic Violence* https://theconversation.com/why-gender-cant-be-ignored-when-dealing-with-domestic-violence-74137
[9] Catia C. Confortini 2006 *Galtung, Violence, and Gender: The Case for a Peace Studies/Feminism Alliance In: Peace and Change* 346.

establishment and defense of the mother country." [10] To illustrate, historians have suggested that gender discourse has promoted and sustained American military interventions. In *Fighting for American Manhood*, Kristin Hoganson explored how gendered politics provoked the Spanish-American and Philippine-American wars. The Spanish were portrayed as "effeminate aristocrats" and "savage rapists," as the Cubans and Filipinos were also highly feminized. The portrayal of distastefully feminine or repulsively masculine enemies underscored American superiority.[11] It heightened military actions as a way to prove American manhood's dominance over the inferior and supposedly feminine enemies and also as means to eliminate competition by annihilating other masculine enemies.[12] The power of violation and the vulnerabilities encompassed by the construct of gender thus legitimizes violent American manifestations.

Furthermore, the militarization of ethnic nationalism often depends on persuading men that warfare validates their manliness. This prompts them to perform as soldiers either in the state's military or in insurgent autonomous forces. For soldiers, the willingness to die for abstract concepts such as "nation" and "religion" is not "natural," and neither is the willingness to apply violence as means of social interaction.[13] As a result, militarism throughout history is largely substantiated by the reproduction of hegemonic masculinities that promote men to engage in violence. Examples of this notion are abundant in Jessie Pope's renowned work, *War Poems,* where combat and war are romanticized and glorified into honorable masculine acts to suit the purpose of exhorting men to fight.

To a certain degree, the notion of war in most societies is rooted in the consensus that soldiering and fighting are constitutive of masculinity. This is not to erase the female role in the conduct of violence in warfare; women have indeed constituted a considerable sector of war efforts throughout history. But it's important to note how female combatants, in most societies, are judged through the lenses of masculinity, with female participation in wars believed to exemplify masculine qualities. War slogans such as "women can do what men do" developed under the premise that the battlefield has been dominated by males. Examples include Russian

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[10] Tickner, J. A. 2001 *Gendering World Politics*. New York, NY: Columbia University Press.
[11] Kriston L. Hoganson 2000 *Fighting for American Manhood: How Gender Politics Provoked the Spanish-American and Philippine-American Wars* Yale Historical Publications Series
[12] Elisabeth Prugl 2003 *Review: Gender and War: Causes, Constructions, and Critique* In: Perspectives of Politics 335-342
[13] Westdeutscher Verlag 2003 *Gender - from Costs to Benefits*

female war participants in the First World War symbolically cutting off their long hair, thus reducing their feminine traits, to join the Russian Women's Battalion.[14]

Coral Cohn has described how cultural scripts of war are acted out in sexual relations, including sexualized imagery in the language of defense, such as the chant of U.S. soldiers in basic training: "This is my rifle, this is my gun; one's for killing, the other's for fun." In *Gender and War*, Goldstein cites literature that describes how the restoration of manliness became a goal for nations on the eve of World War I and in Germany in the run-up to World War II. [15]Similarly, we see the modern-day Chinese government launching media campaigns against the allegedly "feminine" idols and calling for the male citizens to "man up" as we enter an era of increase international tension. In both cases, the masculine gender role is utilized as a political apparatus to channel nations into a more hardline attitude towards its opponents on the international arena.

The gender dichotomy of domination and subordination, and the dividing force of gender construction, are also evident in the justification of exploitive international relationships and imperialistic expansion. In *Gender and Empire*, Philippa Levine evaluates the gendered aspect of British colonialism. The masculine notion of fatherhood characterized the concept of "imperial masculinity," in which the exalted, civilized British forces justify imperial violence as a manly attempt to protect, educate and discipline the allegedly childlike and primitive "rude people." [16]

Indian women were viewed as degraded victims of barbaric society, and Bengali men were seen as effeminate and incapable of caring for their dependents. The British standards by which masculine and feminine characteristics of other groups were defined and judged assisted in drawing the distinction between the "truly civilized society" and the underdeveloped outer groups. These exploitative and violent processes of constructing and maintaining gender differences were also evident across the English relations with indigenes and the plantation colonies of the Atlantic.

[14] Susan R. Grayzel *The Role of Women in War* 157-158
[15] M. Caprioli 2005 *Primed for Violence: The Role of Gender Inequality in Predicting Internal Conflict* In: International Studies Quarterly 161–178
[16] Philippa Levine 2004 Gender and Empire Oxford University Press.

To summarize, in different historical contexts, masculinity represented strength, protection, camaraderie, aggression, rivalry, while femininity represented weakness, fragility, passivity. The gendered binary opposition becomes a representation of the binary opposition in collective human violence. Gender constructs are a crucial dimension of group identity dynamics and intergroup conflicts and have been highly politicized social constructs used throughout history to justify and promote expansionism, domination, and violence.

Conclusion

The Functionalist approach views the construct of gender as a social contract between the opposite sexes that gives structure to social interactions and creates norms that substantiate social solidarity. But the discussions above prove that the construct of gender is exploitive, repressive, and violent. Social solidarity or cohesion it supposedly creates produces meaning within global security orders that enable war through the privileging of combat over peaceful alternatives. The construct of gender serves as a destructive and divisive force, both in the sense that it polarizes the opposite sexes and reinforces inequality, and in the sense that it antagonizes different groups and communities. The divisive force of gender construct, combined with the capacity to use violence been throughout much of history an integral part of male habitus, contributes to inducing, naturalizing, and perpetuating violence at all levels of humanity.

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How Does Screen Time Affect the Etiology, Diagnosis, and Management of Eye Floaters: A Review of the Current and Changing Literature by Zhixin Lucy Li

Introduction

Eye floaters, also known as vitreous floaters, are one of the most common complaints during ophthalmology appointments. Eye floaters may take on different forms and sizes, and they can be present in both eyes or one eye alone. Eye floaters are especially noticeable under bright light and white backgrounds and present as black or white obstructions in vision as seen in **Figure 1**. These floaters are caused by various ophthalmic conditions and can be symptoms of different eye diseases. Basically, eye floaters are a non-specific symptom, like a cough, which can be indicative of many causes, some of which may be vision-threatening. Therefore, it is necessary for patients with floaters to understand the cause of this symptom, and it is crucial to check in with an ophthalmologist if they start having floaters. [17]

Figure 1. Artistic rendering of the vision of an eye floater patient

[17] Kimio Murakami, Alex E. Jalkh, Marcos P. Avila, Clement L. Trempe, Charles L. Schepens, Vitreous Floaters, Ophthalmology, Volume 90, Issue 11, 1983, Pages 1271-1276, ISSN 0161-6420,https://www.sciencedirect.com/science/article/abs/pii/S016164208334392X
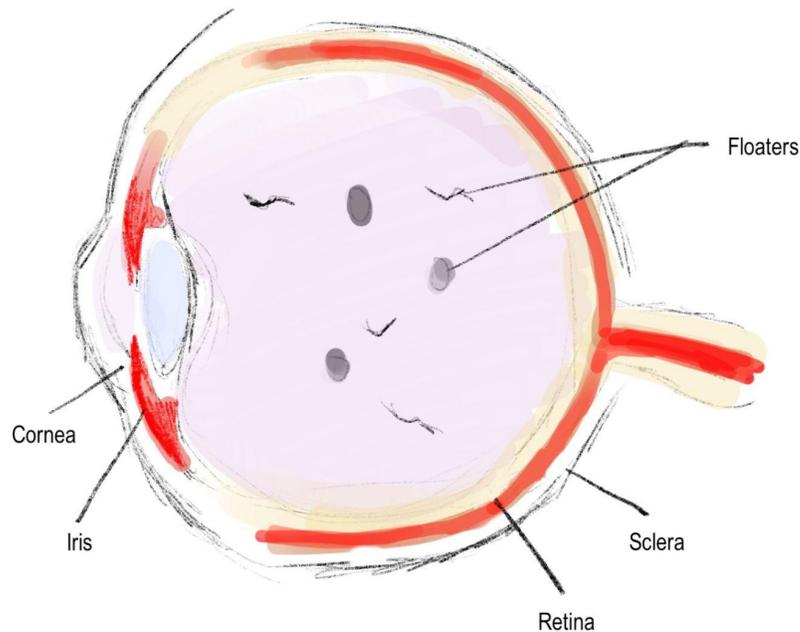
Figure 2. Eye anatomy of a patient with eye floater

There are many ophthalmic conditions associated with floaters. Floaters generally are tiny pieces of cells or debris floating in the vitreous humor of the eye that can cause obstructions in vision as seen in **Figure 2.** They can be broadly grouped into inflammatory causes, structural causes, physiological causes, neurological causes and retinal causes. However, newer phenomena may be contributing to the presence and increasing prevalence of floaters in younger populations. Such phenomena include the increased use of screens. In this review, we aim to discuss the typical causes of floaters, as well as the management and treatment strategies traditionally used by ophthalmologists. Then, we will discuss computer vision syndrome and some of the potential newer causes of floaters in more recent literature. We will conclude with a discussion of the gaps in research and what needs to be investigated moving forward.

Inflammatory Causes:

Uveitis is a common inflammatory cause of floaters that can be vision-threatening. Uveitis is inflammation of different tissue layers of the eye composing the uvea. This inflammation can stem from both infectious and non-infectious causes. Anterior uveitis is inflammation of the iris, which make up the front layers of the eye. Intermediate uveitis is inflammation of the ciliary body and vitreous jelly in the eye. Finally, posterior uveitis affects the back of the eye, including the choroid and retinal layers. This inflammation can cause symptoms such as eye redness, eye pain, blurred vision, and decreased vision. Typically in intermediate or pan-uveitic attacks, patients may also develop dense floaters, which can significantly obstruct vision.

Uveitis, especially infectious uveitis, can occur in patients of any age. On the other hand, anterior and intermediate uveitis typically target younger, healthy patients and may have associations with other rheumatological conditions, such as multiple sclerosis or HLA-B27 syndromes.[18]

Structural Causes:

Increases in the global rates of myopia have also been associated with vitreous floaters. Myopia, or near-sightedness, occurs when patients have elongated eyeballs, which prevents light from being focused directly on the retina in the back of the eye. Especially in those with high, or very severe myopia, this elongation of the eye increases the likelihood that the vitreous jelly shrinks (vitreous syneresis), and this structural change can cause more floaters. Extreme myopia is also a risk factor for retinal tears and/or detachments, which can cause blindness if not addressed urgently.[19]

Physiological Causes:

Floaters are formed by the liquefaction of the vitreous humor, or jelly between the lens and retina. The vitreous is composed of water, collagens, and hyaluronan. The vitreous gel can

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[18]Duplechain A, Conrady CD, Patel BC, et al. Uveitis. [Updated 2021 Aug 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK540993/

[19] Milston R, Madigan MC, Sebag J. Vitreous floaters: Etiology, diagnostics, and management. Surv Ophthalmol. 2016 Mar-Apr;61(2):211-27. doi: 10.1016/j.survophthal.2015.11.008. Epub 2015 Dec 8. PMID: 26679984.

liquify by dissociation of collagen from hyaluronan. The resulting collagen fibrils may aggregate, forming fibers that cause light scattering and the sensation of floaters.

Aging is an important risk factor for this gel liquefaction, which can weaken the adhesion between the vitreous jelly and the retina. Age is the most important risk factor for a phenomenon called posterior vitreous detachment (PVD), in which the vitreous jelly separates from the retina. The most common symptom in PVD is the onset of floaters.[20]

Neurological Causes:

Flashes accompanying floaters may occur structurally when liquified vitreous rubs or starts to pull on the retina, which is called retinal traction. However, such floaters and flashes may also happen because of migraines.

Migraines have many causes and are associated with spasm of the blood vessels in the brain, and flashes can appear in one or both eyes when one does have migraines. Also, when one has migraine, he or she may have less blood flowing to the occipital cortex of the brain. This may cause the sensation of floaters blocking the visual field. If a patient has flashes without having a headache, it might be because of ophthalmic migraine.

Migraines usually begin during puberty due to hormonal changes, and most affect those aged between 35 and 45 years old. Surprisingly, migraines are twice as common in women likely due to a hormonal influence.[21]

Retinal Causes:

Retinal causes are typically most associated with floaters. Retinal detachments classically present as a sudden onset of flashes and floaters with the sensation of a curtain coming over the visual field. A retinal detachment is the disposition of the retina from its normal position. The most common retinal detachment is the rhegmatogenous retinal detachment (RRD), which occurs when vitreous jelly fills a cavity left when the retina retina digresses from its normal

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[20] Milston R, Madigan MC, Sebag J. Vitreous floaters: Etiology, diagnostics, and management. Surv Ophthalmol. 2016 Mar-Apr;61(2):211-27. doi: 10.1016/j.survophthal.2015.11.008. Epub 2015 Dec 8. PMID: 26679984.
[21] Pescador Ruschel MA, De Jesus O. Migraine Headache. [Updated 2021 Aug 30]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK560787/

position. This can lead to retinal tears or a complete retinal separation. Such RRD occurs in 1 out of 10000 people.

Retinal detachment can be caused by diabetic retinopathy. Diabetic retinopathy (DR) is a chronic manifestation of diabetes in which abnormalities in the retinal vasculature develop. DR can manifest itself through different symptoms: blurred vision, eye floaters, distorted vision, and even total loss of vision as a result of retinal detachment in severe cases.

DR progresses through six stages. The first stage is called nonproliferative diabetic retinopathy with stages of microadenoma (small bleeding points), hard exudates (secrets) , and cotton-like soft exudates. The second stage is called the proliferative diabetic retinopathy with stages of neovascularization (new formed vessels and vitreous hemorrhage), fibrovascular proliferation (vitreous organization), and retinal detachment (may lead to blindness). The hyperglycemic state, in which there are high blood sugar levels in the retinal vessels, can damage the blood retinal barrier. This state activates certain cells in the body to produce new blood vessels. These new blood vessels are poorly formed and can often bleed into the vitreous jelly. This is called a vitreous hemorrhage and can cause eye floaters in the patient. Additionally, these poorly formed vessels can result in retinal detachments.[22]

Anyone with diabetes might be affected by the diabetic retinopathy, including type 1, type 2, and gestational diabetes. According to *An Overview of the Eye in Diabetes*, about 10% of diabetics will have sight-threatening retinopathy at one time. Interestingly, diabetic retinopathy seems to impact younger males. However, older patients have no sex differences in prevalence, incidents, or rates of getting diabetic retinopathy. [23][24]

Diagnosing Floaters:

In order to correctly address eye floaters, the ophthalmologists attempt to determine what is causing the floaters. In short, the diagnosis of what causes floaters help the ophthalmologists to rule out the most severe diseases. The severe diseases might cause the formation of eye

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[22] Negi A, Vernon SA. An overview of the eye in diabetes. J R Soc Med. 2003 Jun;96(6):266-72. doi: 10.1258/jrsm.96.6.266. PMID: 12782689; PMCID: PMC539505.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC539505/

[23] Negi A, Vernon SA. An overview of the eye in diabetes. J R Soc Med. 2003 Jun;96(6):266-72. doi: 10.1258/jrsm.96.6.266. PMID: 12782689; PMCID: PMC539505.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC539505/

[24]Steel D. Retinal detachment. BMJ Clin Evid. 2014 Mar 3;2014:0710. PMID: 24807890; PMCID: PMC3940167

floaters, but more importantly, they could cause loss of vision and other serious outcomes if untreated. With a typical eye floater patient, the ophthalmologists may conduct the following eye exams: dilated eye exams, visual acuity tests, slit lamp exams, applanation, indirect ophthalmoscope, and/or ultrasound of the retina if the back of the eye cannot be visualized using ophthalmoscopy. The eye exams mentioned above should be managed in order, and the ophthalmologists should consider only recommending the eye exams that are necessary. Visual depictions of all recommended exams are shown in **Figure 3**.

In patients with floaters, it is essential to obtain a thorough history from the patient of associated symptoms. Additionally, assessing vision using visual acuity tests to make sure that the patient is seeing normally is important. For example, patients with undiagnosed myopia may have floaters. Finally, given that retinal detachments are a common cause of floaters, it is essential to see the retina to make sure that there are no hemorrhages, or blood in the vitreous jelly, tears or retinal detachments that may be the cause of floaters. If the retina cannot be visualized using the slit lamp or ophthalmoscopy, an ultrasound of the back of the eye can be performed to see if there are any retinal separations.
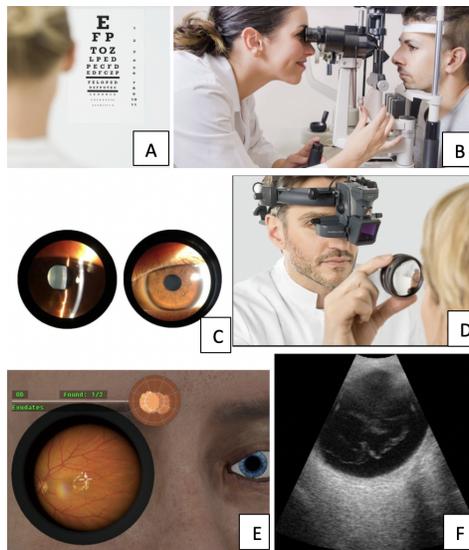
Figure 3: Representations of different tests utilized by ophthalmologists to evaluate floaters. **Panel A** demonstrates a visual acuity test. **Panel B** demonstrates a slit lamp examination. **Panel C** demonstrates corneal evaluation using a slit lamp. **Panel D** and **Panel E** demonstrate indirect

ophthalmoscopy to visualize the retina. **Panel F** demonstrates a retinal ultrasound or B-scan with floaters in vitreous humor.

1.https://www.verywellhealth.com/thmb/OopLnTIDZk4OBrNyMC0TXydVvgg=/3508x3508/smart/filters:no_upscale()/woman-taking-eye-exam-98679948-37debbc681a84c1abca1b9cd58191a88.jpg

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5. https://journal.opted.org/wp-content/uploads/2020/02/P2.WS20.Fig1_.jpg

6. Mamou, Jonathan et al. "Ultrasound-based quantification of vitreous floaters correlates with contrast sensitivity and quality of life." Investigative ophthalmology & visual science 56 3 (2015): 1611-7 .

Managing Floaters:

After diagnosing the cause of eye floaters, ophthalmologists can begin to manage and treat the patient. For example, floaters due to retinal detachment usually require surgical treatments to reattach the retina, while floaters due to uveitis only require steroid eye drops to treat the inflammation. If addressing the cause does not eliminate the floaters, other management strategies can be employed, especially if the floaters are very vision obstructing. The popular management strategies can be classified into two categories: conservative methods and the non-conservatice method. Conservative methods are recommended to patients with persistent floaters and benign vitreous floaters.[25] Such methods include vitamin supplementation, eye exercises, etc. Non-conservative methods are suggested to patients who find floaters extremely bothersome and vision obstructing, even after conservative treatments. Non-conservative methods include laser treatments and surgical vitrectomy, but these surgeries are relatively new and most benefits or risks are still not fully established.[26] Overall, in patients with persistent floaters with unclear causes, there are not well defined treatment or management strategies that guarantee success.

Overall, eye floaters are symptoms for different eye diseases, and are considered nonspecific symptoms. Eye floaters can signal the presence of several diseases and have different causes: inflammatory causes, structural causes, physiological causes, neurological causes, and retinal causes. These causes can be identified by conducting several different eye exams, such as

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[26] Delaney, Y., Oyinloye, A. & Benjamin, L. Nd:YAG vitreolysis and pars plana vitrectomy: surgical treatment for vitreous floaters. Eye 16, 21−26 (2002). https://doi.org/10.1038/sj.eye.6700026

using an indirect ophthalmoscope to visualize the retina. The managements are also determined by the cause of floaters, and if floaters persist, ophthalmologists can attempt other conservative methods and/or the non-conservative methods to diminish the floaters.

Newer Associations with Floaters:

Computer vision syndrome (CVS) is a constellation of different symptoms related to the use of computers. Such symptoms may include blurry vision, double vision, red eyes, and irritation of eyes. Though the symptoms of computer vision syndrome vary, the most prevalent one is dry eye. The CVS could be caused by ocular surface issues or extraocular diseases. Treating CVS usually requires different types of approaches, such as ocular therapy, adjustment of work space, suitable lighting, and etc. The most prevalent treatment includes lubricating eyes with eye drops, and blue screen glasses. Computer vision syndrome still requires more research and development of better and specific treatment for this syndrome.[27]

The increased use of screens may cause more and newer, less investigated ocular problems. One study from the Qassim University College of Medicine demonstrated the prevalence of CVS.[28] In this cross-sectional, descriptive study, a total of 634 university students were enrolled over a 1 year period. Most participants used electronic devices for up to 8 hours a day. During this period, a vast majority of the participants reported some acute symptoms, such as dry eyes while the rest reported chronic issues. The most noticeable problem was that about 78% of the participants had myopia and the study reported a strong correlation between CVS and myopia. Thus, increased use of screens may be associated with the increased ophthalmic symptoms.

In addition to the study mentioned above, two other studies have also shown similar trends. First, a study from Chen JT et al. discovered the relationship between excessive use of blue light and vitreous floaters.[29] This prospective study looked at a group of patients with vitreous floaters and those without (control group). A survey was sent to all 419 participants to

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[27] Blehm C, Vishnu S, Khattak A, Mitra S, Yee RW. Computer vision syndrome: a review. Surv Ophthalmol. 2005 May-Jun;50(3):253-62. doi: 10.1016/j.survophthal.2005.02.008. PMID: 15850814.
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[29] Chen JT, Wu HJ. Blue light from electronic devices may be an important factor for vitreous floaters. Med Hypotheses. 2020 Jun;139:109698. doi: 10.1016/j.mehy.2020.109698. Epub 2020 Mar 25. PMID: 32244150. https://www.sciencedirect.com/science/article/abs/pii/S0306987720303856

investigate if electronic device use was correlated with exposure to blue light, and if this blue light exposure was associated with eye floaters. The investigators found that people with eye floaters tend to spend twice the amount of time on digital devices compared to those without eye floaters. However, this study contains limitations. To begin with, the study only acquired responses from people aged below 40 years old. This small age range is not helpful for generalizing the result to a larger population. Another limitation is the format of collecting data. Survey results sometimes can be extremely skewed with subjective responses, low return rates, accessibility issues, and etc. Thus, the result of this study could only support a correlation between use of digital devices and floaters within the participants.

If the study above is indicative of a newer phenomena in which electronic device use is associated with eye floaters, does this mean that those who are younger and use electronic devices more may develop floaters more? Most people with excessive blue light exposures are typically under 65 years, thus are young people more susceptible to eye floaters? If this is true, then scientists should see a trend of younger people getting the eye floater as time goes on. Similarly, scientists should investigate if perhaps blue light or electronic device use is associated with vitreous degeneration on a molecular level. While some literature cites the correlation between device use and eye floater prevalence, many of these studies have several limitations including control group setup problems, small sample size, ethical issues (forcing participants to constantly use digital devices or not permitting control group the use of digital devices), etc. For instance, the study mentioned above has a sample size problem with only young people participating in the survey. With these restrictions, more research should be conducted to further support the correlation between digital devices and eye floaters.

Another potential concern is the treatment of floaters due to digital devices. Will management of eye floaters change based on the increased use of screen time? The research of eye floaters and blue light is still a relatively new topic, but as younger generations start to gain more access to digital devices, the treatment should also be discussed. Should opthamologists continue with the conservative method of "watch and wait" or should they recommend laser therapy sooner? These questions were not addressed in any studies and because of this gap in literature, young patients with eye floaters may have to endure the inconvenience of black dots crossing their vision.

Conclusion and Further Research:

Due to the significant gaps in the literature mentioned above, this relatively new topic has several potential areas of investigation. To begin, though myopia and floaters might have a strong correlation with each other, the studies and study methodologies are limited to make such conclusions. For example, the research from the Qassim University College of Medicine only investigated floaters in college students. To make broad associations, a larger, more diverse sample size is needed. As Chen JT and his group discussed, too much exposure of blue light might be the cause of fundus lesions and vitreous degeneration. Thus, more research should be done on the effect of blue light glasses in reducing the chance of getting eye floaters. Lastly, based on the existing literature, researchers should focus more on the triple association between myopia, screen use, and eye floaters. For example, as the Chen JT group suggested, increased use of computer screens might lead to floaters, whereas increased use of digital devices could also cause myopia, which is associated with floaters. These three factors should be combined and discussed in several journals. Overall, the multiple gaps in the literature and limitations in these studies indicate that there are still many unknowns to this field. In order to address these gaps, more research with carefully controlled groups, larger sample size, and more diverse age and racial groups should be conducted. Hopefully, by doing these carefully controlled studies, the doctors could design a set of standard methods for treating floaters due to excessive use of screen and blue light.

Addressing a Nation's Guilt: The Nuremberg Trials' Role in DeNazifying Germany

Introduction by Tiffany Wen

"A lie told once remains a lie, but a lie told a thousand times becomes a truth," Joseph Goebbels once said. Goebbels was the chief propagandist for the Nazi Party; his anti-Semitic propaganda was a key reason the Holocaust, a Nazi-created genocide that killed more than six million Jews, came into fruition. The modern-day consensus accepts that Nazi Party leaders, like Adolf Hitler or Goebbels, were the instigators of the Holocaust, but there remains the sensitive issue of nation-wide collaboration. For years, the German population has claimed innocence of involvement in the genocide, and at the Nuremberg Trials, only 161 people were tried. Now, people are starting to question whether or not the Germans, who idly watched as the Nazis deported Jews from their homes, are truly innocent. The German people supported the Nazis even after they started to discriminate against and exterminate the Jewish population, but the people changed their supportive attitudes once the Allies overtook the country—some in Germany claimed that they were powerless to stop the Nazi's anti-Semitic agenda. Even given the denial of acknowledgment towards Nazi ideology, the Allies knew that Germans still heavily followed Nazi beliefs and that they needed to purge the country of Nazi ideas. In truth, the Nuremberg Trials would effectively halt the circulation of Nazi ideology in Germany, but instead, the trials provided relief for many Germans' guilty consciences. By assigning guilt to only a few Nazi leaders, the Allies ensured that there were enough people to fill leadership positions in the country, but because the Nuremberg Trials did not address the German people's involvement in allowing the Holocaust to occur, it allowed the German society to deny their collective guilt—further hindering the Allies' ability to fully denazify the country.

German Involvement

Though the Nuremberg Trials only assigned guilt to a few Nazi leaders, most of the German people allowed the Holocaust to occurring the aftermath of the Reichstag Fire (Democracy Denied: The Authoritarian Alternative). Even after Hitler was installed as chancellor, the German people did not act to stop but continued to support his discriminatory agenda against Jews. Because the deportations of Jews meant "new opportunities for Aryan

Germans to advance their careers, benefit economically, or to assert their alleged superiority through 'self-empowerment,'" many Germans accepted "the exclusion of Jews from public life" (*The Conversation*). Some Germans passively supported the Nazis by acting as bystanders, while others actively helped the Nazis achieve their goal. For example, the Gestapo, the Nazi secret police, was only able to deport as many Jews as it did because of "a network of thousands of informants": ordinary Germans who reported anyone they believed to be breaking the law to the Gestapo (*The Conversation*). These informants were part of the reason that "the Nazis [were] able to murder as many Jews as quickly as they did" (*The Conversation*). Other Germans spread Nazi ideology by teaching children about anti-Semitic ideas (*The Conversation*). The German society also collectively knew about the existence and use of concentration camps, although rarely anyone acted against the atrocious acts carried out there (Ezard). Morris Janowitz was an American sociologist who studied human prejudices, and his paper, "German Reactions to Nazi Atrocities," analyzes the complicity of the German people during the Holocaust and investigates how "the Germans remember the destruction of Jewish shops and synagogues, the systematic discrimination and final rounding-up and deportation of the Jews," yet doing nothing to stop the extermination (Janowitz). The Germans' lack of action counts toward their collective involvement in letting the Holocaust occur, but most acted as bystanders, and eventually, people within the German society used this lack of action to plead their ignorance of the occurrence of the crimes, some even denying the occurence of the Holocaust.

Denial

In spite of their complicity during the Holocaust, many Germans started denying their guilt after the Allies overtook the country, claiming that they were not informed about the discrimination. Previously, Germans openly admitted their knowledge of the existence of concentration camps for Jews due to the reports in German newspapers; however, after the Allies arrived in Germany, the Germans started downplaying their knowledge of and role in the Holocaust (National WW2 Museum). Many said that they could do nothing to stop the Holocaust, though their active or passive support for the Nazi Party refutes that statement ((National WW2 Museum). Germans claimed that gas chambers were only used to "disinfect the concentration camps' inmates," and that when people were murdered, it was "because of war-related events" or the soldiers acting "on their own and not on orders from" the Nazis

(Gerstenfeld). The projection of guilt from Germans onto solely the Nazi Party and the focus of political and Aryan German prisoners in concentration camps were also used "to avoid both guilt for the atrocities and shame that these misdeeds were committed by Germans" (Janowitz 144). Niklas Frank, the son of Hans Frank, the General Governor of concentration camps in Eastern Europe, recalls "his family's refusal to acknowledge his father's guilt as he was being tried" at the Nuremberg Trials to avoid shame (Knight). Many of Niklas' neighbors shared his family's sentiment, pitying him for losing an "innocent father" (Frank). Other Germans minimized the severity of the Holocaust, and when faced with the pictures of torture conducted in concentration camps, Germans responded by asking, "Why get so excited about it, after the Allies [bombed] innocent women and children?" (National WW2 Museum). Because of the bombing that had occurred in civilian cities, Germans chose to minimize the Jews' suffering and focus on their own instead (National WW2 Museum). Using the Allies' bombings to justify Germany's extermination of Jews became a common trend, causing the Allies more difficulty in their attempt to denazify Germany.

Denazification

To denazify the country, the Allies burned Nazi propoganda and used the Nuremberg Trials to expose Germans to the crimes Nazis had committed; however, the denazification attempt failed, and many Germans still loyally supported their Nazi leaders. The majority believed that "the Jewish state has no right to exist and should be eliminated" (Gerstenfeld 37). As the German Jewish author Victor Klemperer described: "Nazism had permeated the flesh and blood of the [German] people through single words, idioms, and sentence structures which were imposed on them in a million repetitions" (Assessing Guilt). The Allies were aware how deeply rooted Nazi ideas were in Germany, and to prevent the Holocaust from reoccuring, they terminated the circulation of Nazi ideology and removed Nazi emblems (Assessing Guilt). The Allies also wanted to exclude all Nazi party members from employment, but quickly realized that "there would not be enough qualified doctors, lawyers, judges, teachers, and civil servants," signifying how deeply Nazi influence had permeated Germany (National WW2 Museum). Moreover, Germans rejected the Allies' attempts to denazify the country because they saw the Allies as enemies, while embracing the Nazis as family (Pfeifer). Alfons Heck, a Hitler Youth member, refused to believe that pictures of concentration camps were real, claiming that the

pictures were Allied propaganda—much to the frustration of Allied troops. It was not until the Nuremberg Trials that he finally acknowledged the severity of the crimes his country had committed (Betraying the Youth). Heck is an example of one purpose of the Nuremberg Trials: to expose the Nazis' inhumane crimes to the German people. Allies increased the radio broadcasts and newspaper printing to spread news of the proceedings, and more than 250 journalists arrived at Nuremberg to report the historic trials (Assessing Guilt). However, "Germans did not express widespread public regret in the immediate postwar years, [nor] did the majority of Nazis receive punishments commensurate with their crimes" (National WW2 Museum). Denazification had failed miserably in Germany, and it was mostly because of the Allies turning their attention elsewhere: the Cold War (Holocaust Explained). Instead of focusing on purging Nazi ideas from German society, the Allies' attention became divided between stopping the spread of communism and denazification. The Germans began to revert back to their previous Nazist ideas, especially since many previous Nazi leaders began to assume positions of power again (National WW2 Museum). Many Germans also started believing that the Nuremberg Trials were unfairly biased against the Nazi leaders; however, much of that idea stemmed from the trials' failure to recognize the German community's shared guilt in the Holocaust (National WW2 Museum).

Nuremberg Trials

  Although the Allies used the Nuremberg Trials to attempt to denazify Germany, the trials only placed guilt onto a few Nazi leaders, which caused Germans to discredit the outcomes of the trials. When the International Military Tribunal (IMT) was assembled, the team established was that a country cannot be guilty for crimes against humanity, which allowed the German civilians to acknowledge that while Germany had engaged in crimes against humanity, the guilt could be placed on Nazi leaders instead of themselves (Holocaust Explained, National WW2 Museum). Nazi permeation into Germany also caused most civilians to protest against the verdicts of the Nuremberg Trials. On January 7, 1951, people in the town of Landberg am Lech held a mass protest against the capital punishment issued to 28 men imprisoned as a result of the Nuremberg Trials, loyally standing by the murderers who had killed thousands of Jews because they thought the verdicts to be unfair and unreasonable (Pfeifer). Many other people discredited the Nuremberg Trials because of the ex post facto laws—laws that make an act illegal after the

act has been committed—that were made. Because the Nazis had committed acts of genocide before it was outlawed and before the term was even coined, Germans believed that the Allies' creating laws against genocide was unfairly targetted towards Nazi leaders (Judgment and Justice). Most civilians dismissed the Nuremberg Trials' verdicts as "victor's justice," completely rejecting the decisions of the IMT (Knight). However, in present time, Germans are retrying Nazi Party members, and while they did not have a direct role in killing Jews, they are "those who helped perpetuate some of the 20th Century's worst crimes," and now, the consequences of their actions have finally caught up with them (Eddy). These trials of Germany's elderly bring back a question decades old: Should there be collective guilt for most Germans alive during the Holocaust, and if so, how do Germans address the responsibility the individual responsibility? (*The Conversation*) Distinguishing between the fine lines of bystander and actor is no small challenge, but the question of collective guilt is something that still echoes in the country decades later.

Conclusion

In the Allies' failed attempt to denazify Germany, they relied on trials that did not address a nation's involvement in carrying out the genocide against Jews, giving Germans a reason to deny their guilt as a nation and to discredit the Nuremberg Trials' verdicts entirely. From the start of Hitler's rise to power to the end of the Holocaust, most German people supported the anti-Semite actions occuring in the country. However, civilians still denied their involvement in the genocide, and the Nuremberg Trials' inability to address the German people's guilt in the Holocaust has caused a vicious cycle of Germans having guilty consciences for not addressing their part in the Holocaust and denying their involvement using the verdicts of the trials as a displacement of guilt. Now, Germany is finally finding people guilty for their indirect involvement in one of the largest genocides in history, grappling with the question of a nation's guilt and how to divide the guilt in a way that is fair but true—a way that addresses not only the inability to prevent the occurence of a genocide but also the negligence to speak out against it. Like Elie Wiesel, a Holocaust survivor and author of *Night*, said, "There may be times when we are powerless to prevent injustice, but there must never be a time when we fail to protest" (Wiesel, *Night*).

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Physics Educators' Efforts to Improve Conceptual Understanding in Physics by Philip Su

Abstract

A review of the past and current literature on physics education have revealed to the greater physics community that instructors around the world have struggled to impart a conceptual understanding of physics onto their introductory college students. Several efforts to create a more interactive physics curriculum are evaluated in this paper in an attempt to understand trends in physics education research. A concerted effort to streamline the physics curriculum across physics departments is minimal. Those who have adjusted the curriculum to go beyond lectures still struggle to perform even with enhancements in the curriculum. Several researchers have led the charge to understand the gaps in understanding among novice physics students. By comparing their results and attitudes to expert physicists, researchers were able to determine a curriculum that addresses gaps in understanding for novice students. Last but not least, the idea of self-efficacy is explored because a student's attitude and behavior towards physics can impact their ability to learn the material. The review of the literature has highlighted a need for physics associations to synchronize an effective curriculum across universities in order to address the cyclical challenges of physics learning that many students and physics faculty have battled for decades.

Introduction

Many students regard physics as one of the most difficult subjects in school. This common stereotype raises one simple question: why do the majority of students find physics so difficult to comprehend? Many introductory college physics courses consist of lectures that fail to engage students into intuitively understanding physics concepts. Lectures alone do not sufficiently allow students to gain complete understanding and mastery of the subject. In this literature review about physics education, it was found that educators can begin to implement a more effective teaching method for college students that go beyond lectures. The role of self-efficacy course performance, alternative curriculums that promise more interactive and effective physics learning, and the effective implementation of physics comprehension among college students will be discussed. Boosting students' intuitive understanding should be the goal of educators in order to motivate students towards effective physics learning.

Testing Traditional Physics Education

Traditional physics teaching curriculums have failed to help students complete physics objectives that are desired by professors and instructors. For decades, educators have struggled to improve the physics education model. One researcher in the 90s, Alan Van Huevelen, performed a review of instructional strategies to identify the core issues. He states there are three main problems that have led to poor physics performance among students. One reason students struggled to have physics understanding is due to a lack of qualitative representations such as diagrams. A second reason was a lack of a physics framework and lacking the ability to correctly recall ideas and concepts from this framework. The third reason was an overemphasis on lecture-based education.

Diagram

Heuvelen found that only 10% of precalculus introductory physics students and 20% of engineering physics students utilized diagrams when solving physics problems (Heuvelen 891). Diagrams are important in physics as they allow students to analyze the essential aspects of a given physics system while excluding unnecessary details. Diagrams also help students make connections to physics concepts from models, helping to illustrate qualitative information based on these quantities. Lastly, diagrams help students formulate mathematical equations from these diagrams (Heuvelen 891).

In the study, Heuvelen uses the following problem as an example:

"A parachutist whose parachute did not open landed in a snowbank and stopped after sinking 1.0 m into the snow. Just before hitting the snow, the person was falling at a speed of 54 m/s. Determine the average force of the snow on the 80-kg person while sinking into the snow." (Huevelan 892)

Using diagrams and representations, students can intuitively connect physics concepts that may be difficult to comprehend otherwise. Heuvelen notes the first step is to use a pictorial representation which allows students to convert written words into a picture that shows two

scenes of the parachutist: a beginning y position along with the initial velocity and a final y position along with final velocity (Heuvelen 892). This helps to build a connection between the variables within the scenario and their purpose. The second step is to create a physical representation by using the pictorial representation in order to isolate important physical quantities. For this, a free-body/force was created using arrows to show the forces acting upon the parachutist which are the normal force of the snow (with a direction going up) and force of gravity (with a direction going down). After creating these diagrams thus far, students are able to qualitatively reason through the information isolated (ie. the forces) to make relevant connections (Heuvelen 892). The final step is to create a mathematical representation to connect the physical quantities and solve for unknown variables. To solve for the average force that the snow exerted on the person, Heuvelen shows that the kinematics equation

$2a(y - y_0) = v^2 - v_0^2$ can be used since the diagrams show that some given quantities were y,

y_0, v^2, and v_0^2 (Heuvelen 892). Solving for a (acceleration) through algebra, this quantity can then be used to solve for the average force that the snow exerts through the mathematical equation for Newton's Second Law $\Sigma F = ma$.

Physics Frameworks

In physics, it is imperative to have the ability to build, elaborate, and adjust a physics framework, and yet, students must have the ability to recall the correct concepts to solve the problem. In Heuvelen's research, a question about springs and conservation of energy was given to the students on a cumulative final. However, over 50% of the students started to use the most recent spring equation taught in class, which was about simple harmonic motion rather than the correct energy concepts (Heuvelen 892). This led Heuvelen to believe that students had disconnected perceptions of physics concepts rather than seeing physics chapters as interconnected. Students often used unrelated ideas to solve problems showing that they had trouble recalling the correct concepts for a given physics problem. An example of what a physics framework could look like is shown in a model, where a top-down structure is used to solve problems. At the very top is the "Newtonian Mechanics" box. From this box, there are two types of motion that students can choose from (Heuvelen 893). The "Dynamics" is accelerated motion which consists of translational motion, circular motion, and rotational motion (Heuvelen 893).

The "Conserved Motion" consists of linear momentum conserved, angular momentum conserved, and statics (Heuvelen 893). When a student is able to identify that a system has no interactions with things outside of it, they should realize that some aspect of that system is conserved which helps to identify appropriate concepts to utilize. Vice versa, if they can identify that a system does have outside interactions, students will see that some aspect within that system has been changed. Building a unified physics framework while using a top-down recalling method through cues can help with problem-solving.

Overemphasis on Lectures

       Lectures can be efficient tools for conveying information to a large group of students. Standard lectures have been the solution to account for a large number of students in classrooms. However, lectures alone are not sufficient as many students have different learning styles. Therefore, simply telling students information regarding physics can often cause a lacking understanding. This is because students are unable to gain experimental evidence in order to support their conceptual understanding. Heuvelen compared efficient physics education to a transformer. In order for an efficient transfer of knowledge is given to the student, the methods in which these ideas are taught must be similar in characteristic to the student's mind itself (Heuvelen 893). Vice versa, the difference between the teaching methods and traits of the student's mind would cause an ineffective learning experience. In the future, physics education must improve its curriculum to enhance basic physical quantities and concepts, problem-solving skills, quantitative understanding, concept interconnectedness, active learning, and constant use of all concepts learned.

Interactive Learning Efforts

       The effort to improve conceptual learning has been on the rise, though sporadic. Many researchers agree that lectures have been ineffective in developing conceptual learning among students. Several tests have been developed throughout the years to understand just how ineffective traditional curriculums have been. The following efforts show how researchers have strived to comprehend physics learning.

Active Learning Problem Sheets: In the late 90s, at the time of his research, Huevelen proposed a small group-based learning style in which students could elaborate on their physics knowledge by working on carefully designed worksheets, called the Active Learning Problem Sheets (The ALPS kit). The kit exists to provide key feedback from the professor and students' peers about how their perceptions of the concepts may be improved (Heuvelen 893). The special worksheets were designed to help students learn physics through a series of thought experiments, which helped to build a logical framework of the subject. To retain the information taught, constantly going over past topics and their applications help students see that all parts of physics are fundamentally interconnected and that they each serve an important purpose.

Force Concept Inventory: In 1992, David Hestenes at Arizona State University devised the Force Concept Inventory (FCI) to understand a student's conceptual learning of mechanics (Redish and Steinberg 26). Over 2000 students were provided the survey before and after a college calculus-based physics course. This survey was created in order to understand student difficulties in fundamental physics concepts, which are imperative for physics problem-solving. David Hammer at UC Berkeley interviewed students and defined their beliefs and expectations about physics in three areas: independence/authority, coherence/pieces, and concepts/equations (Redish and Steinberg 27). Building off of Hammer's observations, the Maryland Physics Expectations survey gave way to three more areas which include physics-reality link, a math-physics link, and the effort variable (Redish and Steinberg 27).

Workshop Physics: Around the same time, Priscilla Law and others at Dickinson College developed Workshop Physics which were lab-based sessions (consisting of lectures, recitations, and laboratories) of two 3 hour sessions a week where students work in small groups to complete a lab with an activity guide in order to understand physics concepts through observation (Redish & Steinberg 28). Workshop Physics replaced traditional curriculum. The survey contained 29 introductory mechanics physics questions that aimed to locate conceptual difficulties within physics students. Another researcher named Richard Hake from Indiana University created an equation for something called the Hake factor in regards to the FCI. This factor is a meritorious figure which measured the normal gain for a student's test score before and after the physics course. It is calculated by dividing the gain in percentage (the final score on the FCI subtracted

by the initial score on the FCI) by the possible gain (the highest achievable score, 100, subtracted by the initial FCI score). For a traditional curriculum with recitations, the Hake factor was calculated to be 0.16 ± 0.03, the Hake factor for a traditional curriculum with tutorials was calculated to be 0.35 ± 0.03, and the Hake factor for a Workshop Physics class was 0.41 ± 0.03(Redish & Steinberg 29). The results show that the use of tutorials showed improvements in scores after the class.

Physics by Inquiry and Tutorials in Introductory Physics: For nearly 20 years Lillian Christie McDermott from the Physics Group at the University of Washington studied physics learning and received the 2002 Medal of the International Council in Physics Education of IUPAP at the GIREP Seminar (Quality Development in Teacher Education and Training). Throughout the 80s and 90s, for her award-winning research, Lillian Christie McDermott presented a physics problem to over 1000 students asking them to rank the brightness of light bulbs of different electrical circuits. Of them, only 15% of the participants were able to answer the question correctly (McDermott 1128). When analyzing the results, it was found that the most common error within the problem stemmed from the lack of a conceptual understanding of physics in terms of an electric circuit. Based on these results, the Physics by Inquiry (PbI) curriculum was developed. This curriculum is a laboratory-based learning method that uses specific experiments and activities that aimed to help students develop an understanding and framework of physics conceptually.

They also developed another curriculum known as Tutorials in Introductory Physics. This curriculum along with PbI was developed through trends that the researchers noticed after studying the problems of a traditional physics curriculum. The Tutorials in Introductory Physics include four-step sessions in which students work together in small groups. The first part consisted of a pretest that conveyed to the students about topic objectives. The second included the worksheet which is when the small groups collaborate amongst each other in order to develop reasoning, conceptual understanding, and framework building. Then, homework was assigned to help reinforce the ideas learned. Finally, the post-test was administered to check for conceptual understanding and reasoning. Score comparisons between pre-tests and post-tests

showed an increase in a score higher than those who were not a part of the tutorial experience (McDermott 1135).

The Impact of Instructional Strategies in Colleges

In 2008, Henderson and Dancy set out to understand physics teaching methods among several college faculty through an in-depth study. With the assistance of the American Institute of Physics Statistical Research Center (SRC), they developed a survey in order to learn about the impact of Physics Education Research (PER) among students. The survey aimed to understand whether or not physics faculty were aware of RBISs, if it was utilized in class, how often RBISs were changed within a physics course, and if teachers discontinued the uses of RBISs over time.

The online survey was given to physics faculty members from three different colleges which consisted of 61 questions, divided into five categories. Participants' teaching situation, class size, attitudes toward RBIS, instructional goals and practices, job responsibilities, productivity in their research, education, and general demographic questions were included in the survey. The results of the survey showed that about 87.3% of faculty members have heard of at least 1 RBIS with 50.3% knowing 6 or more (Henderson and Dancy 020107-6). About 48.1% say that they use 1 or more RBIS, 34.3% say that they use 2 or more RBIS, and 22.6% say that they use 3 or more RBIS (Henderson and Dancy 020107-6). "Attractiveness" of an RBIS was determined by the usage percentage of the method. With this definition, the four most used (out of people who knew about the strategy) RBIS was Peer Instruction (46%), Ranking Tasks (40%), TIPERS (32%), and Interactive Lecture Demonstrations (31%) (Henderson and Dancy 020107-6).

The researchers also noted that all of these RBISs were methods that could more easily be implemented within a traditional college physics curriculum. Survey results also indicated that faculty members usually modified RBISs in various ways. 47.9% of faculty members who used Peer Instruction and 41% of faculty members who used Cooperative Group Problem Solving stated that they made drastic modifications to the RBIS before implementation (Henderson and Dancy 020107-7). However, certain RBIS that faculty use such as Ranking Task and RealTime Physics Laboratory only have a 21.2% and 21.3% (respectively) chance of making drastic modifications (Henderson and Dancy 020107-8). The working theory as to why this is the case is because RBISs such as Peer Instruction and Cooperative Group Problem Solving is that

without modification, they would change many aspects of the entire course while RBISs such as Tanking Task can be implemented without much modification flexibly. The RealTime Physics Laboratory RBIS was theorized to have a low significant modification rate due to the laboratory setting being ready to utilize already.

Time constraints was another issue in which 12.3% of discontinued users referred to showed that although research-based instructional strategies have the potential to be of use, researchers should also consider how these instructional strategies would transfer into the actual classroom (Henderson and Dancy 020107-7). The alternative to this would be physics faculty shifting their conditions in order to better replicate a setting in which classes are made to be the best settings for research-based instructional strategies. Either solution or one in between would ideally help with the creation and implementation of physics research-based instructional strategies with fewer issues.

In terms of the rate of discontinuation of RBISs, this measure was defined as the number of users who discontinued an RBIS divided by the number of users who discontinued an RBIS plus the number of people who are still using an RBIS. The percentages ranged from 27.1% (TIPERS RBIS) to 80% (Workbook for Introductory Physics RBIS) (Henderson and Dancy 020107-8). Out of the participants who discontinued using RBISs, about a third said that it was because they either did not work (19.8%) or they took too much class time (12.3%) (Henderson and Dancy 020107-8). However, about 20% of all faculty members indicated that they were working on instructional improvements upon or outside of the RBISs (Henderson and Dancy 020107-6).

Comparing Novices to Experts

Over the course of 20 years, a couple of studies have revealed how experts and novices approach physics learning. By understanding the differences in approaches between the novices and the experts, researchers were able to observe how experts practice conceptual thinking and pinpoint why novices fail to do so. Kohl and Finkelstein made significant use of the representations in order to grasp their effectiveness. Mason and Singh discuss how novices can develop intuition about a given problem the way experts do.

Experiment One

In 2008, researchers Patrick B. Kohl and Noah D. Finklestein organized an interview with 11 undergraduates (novices) who were taking an algebra-based physics course and 5 physics graduate students (experts). Within the set of 11 undergraduate students, 6 were students from a first-semester algebra physics class (Physics 201) while 5 students were from a second-semester algebra physics class (Physics 202). The students from Physics 201 were given a question known as "the car problem." This question asked the students to organize as many representations of the motion of a car into different groups from a collection of graphs (varying from velocity-time graphs to position-time graphs), animations showing the motion of a car, and written descriptions of a car's motion. The students from Physics 202 were given 5 problems (with the 5th being a challenging problem) about calculating force or charge within electrostatics with the inclusion of a free body diagram. Experts (the graduate students) were given both the car problem and the electrostatics problems, along with a pulley problem that would challenge the experts.

The interviews were divided into increments of 10 seconds where any pictures, graphs, models, equations, and math used/created were noted along with a secondary measure of 6 periods of time: reading/translating (into equations and diagrams), an analysis (solving for variables or conceptually understanding the problem), exploration (of other problems and methods), planning (for the solution), implementation (in a process-oriented manner), and verification. In order to characterize the different types of problem solvers with more detail and specificity, a case study was performed on 3 students named Carrie (a novice from Physics 202 who incorrectly answered the questions), Sam (a novice from Physics 202 who performed well), and Jim (a first-year graduate student who was chosen as the strongest expert).

Carrie was a student who incorrectly answered all 5 questions from the electrostatics questions given to the Physics 202 novices. Sam was able to answer 3 out of 5 questions, including the challenge question, correctly with the other two questions being incorrect due to an error in multiplication by 10. Jim, the expert graduate student, was able to solve all problems correctly and quickly. A commonality among all three case studies was that they all used multiple representations such as free-body diagrams in order to solve their problems. However, further analysis showed that Jim and Sam created representations in order to understand the question and how to solve it while Carrie seemed to create representations out of the thought that

it was required rather than because it served an important purpose in understanding (Kohl and Finkelstein 010111-7).

Overall, both novices and experts tended to draw a picture immediately after reading a question rather than writing an equation. For the car problem, novices usually started off their problems using the animations or written descriptions as starting points while experts would use all four types of representations in order to start the problem. Along with this, novices solving the car problem would finish creating one group and then move on to the next group, rarely returning to a finished group, while experts would be more likely to try creating multiple groups at the same time or would be more likely to review a completed group. Experts spent 43% of their time in the analysis portion and 1% of their time in the exploration portion of the problem-solving process while novices spent 25% of their time on analysis and 15% of their time on exploration (Kohl and Finkelstein 010111-10). These numbers could be thought of as indicating that experts were more likely to try understanding the given information and produced models in a productive manner and with a specific goal/subgoal in mind (Kohl and Finkelstein 010111-10). However, it could also be said that the experts' experience could have allowed for a different approach than they would have on a difficult problem. Therefore, the analysis was also done on the pulley problem in which experts scored similarly to how novices scored on the electrostatics questions. The same analysis-heavy trend was found (Kohl and Finkelstein 010111-10).

Experiment Two

Scientists continued to compare novices to experts to understand the gaps in physics learning. In 2016, Andrew J Mason and Chandralekha Singh organized a survey for 541 introductory physics students, 42 Ph.D. physics students, and 12 physics faculty members called the Attitudes and Approaches to Problem-Solving (AAPS) survey which included 16 modified (for clarification purposes) questions from the attitudes towards problem-solving survey (APSS). APSS was a survey developed to study the attitudes of students during physics problem-solving modeled after the Maryland physics expectation survey (MPEX), which they modified by adding 17 of their own inquiries with the feedback of physics students and faculty at a state university. The questions directly asked students about their attitudes and approaches to their problem-solving strategies with response options ("Strongly Agree", "Agree somewhat",

"Neutral or do not know", "Disagree Somewhat", and "Strongly Disagree"). An example of this is, "If I am not sure about the right way to start a problem, I am stuck unless I go see the teacher/TA or someone else for help." During this interview, the surveyors employed a "think-aloud protocol" in which the students were told to demonstrate their thinking process by narrating their thought process for several questions, which matched up with the results shown in the survey.

Answers given by faculty members were referred to as "favorable" responses for their physics knowledge and those lacking in physics knowledge were considered "unfavorable." Introductory students responses who participated in the survey on average had the unfavorable responses on questions such as, "After I solve each physics homework problem, I take the time to reflect and learn from the problem solution" (Mason and Singh 8). Four similar questions for least favorable responses led the researchers to suggest that introductory students have a view of physics as a non-intuitive subject (Mason and Singh 8). Introductory physics students had more difficulty solving physics problems with more variables/symbols and would prefer to work with number values due to the prospects of simply plugging and chugging numbers into equations (Mason and Singh 8). The favorable results from faculty members showed that experts had the same level of difficulty solving physics problems with more variables/symbols than with number values. For two other similar questions, the students showed more of the unfavorable response of needing/looking for help from others when they were unable to solve the problem; relative to the faculty results, they also said that they did not enjoy solving difficult physics problems (Mason and Singh 8). This was contrary to the favorable response which was that experts would not look for outside help and enjoyed solving difficult physics problems.

All in all, faculty members very much valued the importance of reflecting upon solving physics problems while a majority of introductory students had differing opinions. Many students also thought that understanding the mathematical concepts of physics was the most important factor when compared to the faculty members. Half of the introductory students noted that they would use their "gut feeling" when answering conceptual physics problems instead of proof through the laws and principles of physics (Mason and Singh 15). Compared to the introductory students, Ph.D. students on average had more favorable answers those similar to that of faculty (Mason and Singh 18). This could mean that students develop a more favorable

attitude and approach to physics while learning physics and/or that those who have already possessed favorable attitudes and approaches comprise a large portion of the Ph.D. students.

Study Comparison

From the 1990s to recent times, one important commonality of the novices is that these students would often rely and emphasize the mathematical aspects more than the conceptual aspects of the problem. Even when they had the correct equation, they often did not know how to use them in the correct way. As noted in the Kohl and Finklestein study, student Carrie showed how she could remember the correct equation for a particular situation, but was unable to apply it in order to obtain a solution. Similarly, in the Mason and Singh study, the survey showed that students emphasized the mathematical aspect of physics problem solving rather than conceptual understanding. In the Redish and Steinberg study, the survey used within the study showed that half of the engineering physics students thought that proofs and derivations were only important for explaining the viability of a problem, rather than to show how these proofs and derivations relate to fundamental physics concepts. In all three studies, the students tend to use mathematical equations without understanding the physics behind it. It would seem that students are now prioritizing mathematics over physics, causing them to have difficulties understanding conceptual aspects of physics.

Another common theme is that students often utilize problem solving techniques without knowing why they were using them. For example, in the Mason and Singh experiment, 50% of introductory students would use their "gut feeling" when solving conceptual physics questions (Mason and Singh 15). In the Kohl and Finklestein case study of the student Carrie, researchers noted that Carrie created representations simply out of habit without actually knowing what to do with them (Kohl and Finkelstein 010111-7). On the other hand, in the other two case studies, the students used representations to help model and understand a given situation within a problem.

Understanding how novices approach physics problems is paramount to understanding how to design a more effective curriculum for new students. And for over 30 years, it has been proven that lecture-based classes are ineffective in teaching conceptual understanding of physics. Using representations and diagrams is recommended, however, learning how to use them is another matter that educators must address. The key difference between novices and experts is that experts focused on conceptually understanding the problem. For instance, in the Redish and

Steinberg study, experts were found to have a favorable view towards having a deep understanding of physics instead of just merely memorizing concepts. In the Kohl and Finklestein experiment, it was found that experts would spend 43% of their problem solving time analyzing and understanding the question (Kohl and Finkelstein 010111-10). A greater portion of the time was spent on problem solving time than on analysis when compared to the novice students. Even in the Mason and Singh experiment, the results noted that experts had favorable attitudes toward reflection, which novices fail to do. Naturally, a physicist has much more time and experience with the subject of physics, therefore, would more likely know and understand it. By analyzing the key characteristics of an expert physicist, education researchers can continue to improve upon the teaching model.

Self-efficacy Among Students

In 1999, Researchers Edward F. Redish and Richard N. Steinberg created the Maryland Physics Expectations (MPEX) survey administered to 1500 physics students from 6 different colleges. The categories these questions tested were designed based on David Hammer's research student attitudes/expectations towards physics. Expert physics instructors were asked to choose their responses that they preferred their students to have for the questions. These responses were known as the "favorable" response while the opposite responses were considered "unfavorable" (Redish and Steinberg 27). They were trying to understand which characteristics could help students learn and understand physics more effectively by using the MPEX as a component of their analysis.

There were six categories of physics learning used to identify a student's overall view of learning physics. These categories were independence, coherence, concepts, reality link, math link, and effort (Redish and Steinberg 26). For "independence", independent thinking to understand concepts was favorable whereas simply absorbing the information was unfavorable. For "coherence", seeing physics as a connected framework was favorable while seeing physics as unconnected pieces were unfavorable. For "concepts", understanding concepts were considered favorable while simply memorizing them as unfavorable. For "reality link", believing that physics concepts were applicable and useful in the real world was favorable while believing that physics concepts did not have much to do with the real world was unfavorable. For "math link", believing that math was a logical way to represent physics concepts was favorable while

viewing math and physics as independent was unfavorable. For "effort", putting in effort in order to understand and study physics was favorable while not putting in the effort to correct and understand physics was unfavorable.

Redish and Steinberg noted that students decreased in favorability from the beginning of the semester to the end for traditional curricula for several traits in the MPEX (Maryland Physics Expectations) survey (Redish and Steinberg 29). Along with this, another result that they shared was that 50% of students had an unfavorable view regarding their agreeance or disagreeance of the prompt "All I learn from a derivation or proof of a formula is that the formula obtained is valid and that it is OK to use it in problems" even after taking 3 semesters of calculus-based physics (Redish and Steinberg 26). Luckily, the researchers also note that other learning environments, such as Workshop Physics helped students to develop more favorable traits throughout the courses (Redish and Steinberg 29).

Another study was performed in Taiwan regarding self-efficacy. Researchers Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai organized two surveys in 2015, one called the physics learning profile (PLP) survey and the other one called the physics learning self-efficacy survey (PLSE). Both surveys were given to 250 physics undergraduate students throughout several universities in Taiwan. A cluster analysis was used to sort the PLP survey results into one of three groups: reproductive, transitional, and constructive. The PLP survey was a 20 question survey to determine a students conceptual learning process. The constructive learning conception values an opportunity to understand, the reproductive learning conception values a form of memorization, and a third category called the transitional learning conception is somewhere in between the two types. The PLSE is a 32 question survey about self-efficacy divided into 5 categories measuring for confidence level in higher-order cognitive skills, problem-solving, scientific inquiry, practical work, everyday application, and science communication.

The results noted that those with high self-efficacy tended to set bigger goals for themselves, spending greater amounts of effort to achieve those goals, and use flexible learning strategies. These factors have positive correlations with learning and academic achievement. The results of the PLP survey showed that 66 of the 250 (26.4%) students had reproductive learning profiles, 87 of the 250 (34.8%) students had transitional learning profiles, and 97 of the 250 (39%) students had constructive learning profiles (Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai 615-616). A further breakdown of the PLP survey analyzed for testing,

calculating/practicing, and understanding. Reproductive learning profiles tended to score higher on the testing and calculating/practicing portions of the survey, which reflected that this learning profile cared about preparing for physics tests and manipulating formulas/equations (Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai 616). Transitional learning profiles tended to score higher on the understanding than the reproductive profiles and score higher on calculating/practicing portions compared to the constructive learning profiles which reflected that this learning profile cared about a combination of both reproductive and constructive conceptions (Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai 616-617). Constructive learning profiles tended to score higher on the understanding portions compared to the reproductive learning profile while scoring similarly to transitional learning profiles which reflected that this learning profile cared about equating physics learning with an in-depth understanding of physics knowledge placing less emphasis on tests and calculating/practicing (Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai 617).

When dissecting the PLSE survey results, the researchers found that those who had constructive learning profiles tended to have higher scores (meaning they had higher self-efficacy for all 5 components of the PLSE survey) than reproductive learning profiles (Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai 617). Transitional learning profiles fit in between for levels of self-efficacy (Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai 617). A further breakdown of the data showed the correlations between PLP learning profiles and the five components of the PLSE survey. Transitional and constructive learning profiles both scored similarly to each other and much higher in self-efficacy compared to reproductive learning profiles for the categories of higher-order cognitive skills and practical work (Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai 617). Constructive learning profiles had higher self-efficacy scores for the everyday application and science communication portion of the PLSE survey compared to reproductive and transitional learning profiles (who scored similarly to each other in those categories) (Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai 618). These results helped researchers to conclude that physics teachers should emphasize learning physics and de-emphasize the importance of studying for testing which would help to keep self-efficacy within students higher (Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai 618). Along with this, they should also help to emphasize the applicability of learning physics which allows for higher self-efficacy scores for the everyday application of physics. For improvement of

self-efficacy within science communication, it is said that those who supported constructive over reproductive physics learning conceptions tended to score higher (Tzung-Jin Lin, Jyh-Chong Liang, and Chin-Chung Tsai 618).

Conclusion

The greatest challenge in physics education is implementing the numerous tools to improve conceptual learning across universities. A standard has not been set in place, which shows that greater efforts must be made in order to convince other physics departments to reconsider traditional methods in physics learning. Oftentimes, professors are left to their own devices to improve the model while some refer to tools and curriculums created by other researchers to supplement their lectures. For decades, the performance of introductory physics students have suffered; and without a united effort across physics institutions, students will continue to struggle in honing a clear conceptual understanding of the materials.

Limitations

The limitations of the study include an inconsistency with the locations of the studies. Most of the studies were held in the United States, but the paper also includes a study held in Taiwan. It was also a challenge to include every literature related to this topic. Another factor that has yet to be thoroughly researched is regarding the performance of novice students who studied under a more interactive physics curriculum. Conceptual learning is difficult even beyond lecture-based curriculums.

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Induced Pluripotent Stem Cells (iPSCs): A Powerful Resource for Myocardial Regeneration by Avantika Samanta

Abstract

Globally, heart disease is one of the leading causes of death. Treatments and therapies exist, yet they are usually not powerful enough to make a lasting impact or a permanent solution. Regenerative technologies, including cell therapies with induced pluripotent stem cells (iPSCs), are becoming more frequently used for tissue engineering applications. IPSCs are stem cells derived from adult somatic cells that are reprogrammed to a stem cell-like state and hold regenerative potential similar to that of embryonic stem cells. These cells are then able to differentiate into several lineages, one of them being cardiomyocytes (CMs). iPSC-derived CMs have been exploited for the creation of cellular and tissue models for studying the physiology or physiopathology of diseases, for drug screening applications, or direct injection or implantation with biomaterials into the heart. This review assesses and discusses iPSCs as an important resource for myocardial regeneration.

Introduction

Every 36 seconds 1 person dies from heart disease, which is currently the leading cause of death in the United States [1]. Cardiovascular disease refers to different types of heart conditions such as coronary artery disease, heart failure, cardiomyopathy, and more. Surgical strategies such as a transplant or an angioplasty, along with non-surgical methods such as medication or even something as simple as a lifestyle change are treatments currently available for cardiovascular diseases [2]. However, these therapies are unable to completely restore the loss of function that occurs during major adverse cardiac events, so alternative solutions are needed. A potential source for therapy for the most severe cases of cardiovascular diseases can be found through the use of stem cells. Stem cells possess the ability of self-renewing indefinitely, as well as the ability to become specialized cells through the process of differentiation. There are 3 main types of stem cells; embryonic stem cells, adult or tissue-specific stem cells, and induced pluripotent stem cells. Embryonic stem cells are derived from blastocysts and are pluripotent meaning they can become any type of cell in the body. Adult stem cells are found in many adult tissues like bone marrow or fat, but they have a limited ability

to differentiate and are considered multipotent. Both embryonic and adult stem cells have certain downsides: embryonic stem cells pose an important ethical concern, and adult stem cells have limited proliferation and differentiation capabilities [3]. Induced pluripotent stem cells present the main advantage of embryonic and adult stem cells, i.e. pluripotency and isolation from adult tissue while overcoming any ethical concern associated with the use of embryos for cell isolation. Discovered by Takahashi and Yamanaka in 2006, these are genetically reprogrammed adult cells that act like embryonic stem cells, providing the opportunity for pluripotency. When successfully differentiated into cardiomyocytes they can aid in replacing the lost muscle cells within an impaired heart. In this review we will assess the process of using induced pluripotent stem cells to create cardiomyocytes, assisting in cardiovascular regeneration.

Induced pluripotent stem cells.

Induced pluripotent stem cells are adult cells that are genetically modified, or "reprogrammed" in an embryonic-like state, therefore being pluripotent and able to be differentiated in multiple cell types. iPSCs provide a readily available source for regenerative medicine considering they can be expanded and differentiated into multiple cell lineages in vitro, before implantation.

The Discovery of iPSCs

IPSC technology was created based on numerous scientific findings from related fields, specifically created by the merging of three major scientific streams. Nuclear transfer was the first stream; it started in 1962 when John Gurdon reported that he was able to generate tadpoles from unfertilized eggs which received a nucleus from intestinal cells within adult frogs. [4]. Decades later Ian Wilmut along with his colleagues used the somatic cloning of mammary epithelial cells to generate the first mammal named Dolly, [5]. These successful discoveries show that terminally differentiated cells are able to develop into entire organisms because they carry and retain the genetic information that is needed. The next stream was the discovery of "master" transcription factors which started in 1987, where the *Drosophila* transcription factor Antennapedia was used to induce the formation of legs rather than antennae when ectopically expressed [6]. Along with this, a mammalian transcription factor, MyoD coil, was found to convert fibroblasts into myocytes leading to the idea of exploiting transcription factors as master

regulators of cell phenotypes, a key concept in iPSCs work [7]. The first two streams combined allowing for researchers to hypothesize that through the combination of multiple different factors it is possible to reprogram somatic cells back into their embryonic state and generate pluripotent stem cells.

The third stream of research involves embryonic stem cells, ESCs, and discovering their pluripotency, from studies in mouse embryos [8] and humans [9]. Between 2007 and 2011, three independent groups announced that they were able to reprogram adult cells and create induced pluripotent stem cells (iPSCs) [10-12]. Initially, skin fibroblasts were used as a source for iPSCs, but eventually, other cell types, including peripheral blood mononuclear cells were found to be a good source for creating iPSCs [13]. Additional sources for iPSCs include keratinocytes, melanocytes, amniotic cells, adipose derived stem cells, hepatocytes, and more [14].

The differentiation of iPSCs into the cardiac lineage

IPSCs are used for cardiovascular regeneration as a source of healthy cardiomyocytes. For obtaining functional cardiomyocytes from iPSCs colonies, they are differentiated with established protocols. IPSCs colonies are typically cultured in monolayers and small molecules and growth factors are added to iPSCs cultures to induce differentiation along the cardiac lineage [15].

Understanding cardiogenesis is beneficial since it allows for access to the feed-forward gene regulatory networks that occur during development and ultimately derive useful and relevant cells. The mouse is often used as a model for cardiogenesis. During embryo development, cells begin to form the extraembryonic mesoderm and mid-streak cells will form embryonic tissues such as the heart and blood along with the endoderm. The First Heart Field, (FHF), progenitors then form the cardiac crescent whereas the Second Heart Field, (SHF), progenitors will be found in the area medial to the crescent. The cells between these two fields will proliferate and migrate in turn creating a segmented structure of the cardiac chambers. [16-18].

Similar to embryonic development, two main steps are required for iPSC differentiation into cardiomyocytes: (1) mesoderm induction and (2) the use of growth factors and small molecules for differentiation into the cardiac lineage. Mesodermal induction is achieved through NODAL signaling and activation of the canonical Wnt pathway, by use of activin A, bone

morphogenetic protein 4 (BMP4) and basic fibroblast growth factor 2, (b-FGF2), [19]. The transition from mesodermal cells to cardiac progenitor cells requires treatments with small molecules and Wnt inhibitors, such as SB431542, dorsomorphin, IWR-1, IWR-2 and IWR-4 [20-21]. This is haw the iPSC differentiates into a cardiomyocyte.

The use of iPSC-derived cardiomyocytes for cardiac regeneration

Due to the unique regenerative potential and absence of ethical concerns, iPSC-derived cardiomyocytes (iPSC-CMs) have been extensively used in the past decade for drug testing, production of in vitro models of cardiac physiology and pathology, cardiac engineered tissue formation and transplantation in animal models of cardiac disease. In the next sections of this review paper, the most promising strategies involving the use of iPSCs-CMs for cardiac tissue engineering and regenerative medicine will be discussed, and relevant examples of in vitro and in vivo applications will be provided.

In vitro drug/toxicant screening

iPSC-CMs can be used in vitro for the discovery and testing of novel drugs, or for the assessment of cardiotoxicity of molecules and chemical or environmental toxicants. iPSCs-are a convenient source of human cardiomyocytes for testing safety, efficacy and dose-dependence of target drugs and molecules and even explore genome editing on these models and check for possible side effects [22]. In a dose-dependence test, the concentration of the drug or active molecule is gradually increased until beneficial or toxic effects are observed on cell viability and function. This technology allows for testing for drug toxicity along with aiding in novel drug discovery [23].

For in vitro drug and toxicant screening, different iPSCs models, including cell monolayers, spheroids, and heart on a chip devices have been investigated. Cell monolayers are grown on a dish in 2D, and are treated with the test drug, molecule or toxicant at different concentrations. This type of culture allows for a more readily reproducible and controllable environment where the test substances are confined to a well defined volume [24]. Cardiac spheroids are small aggregates of cells that are organized in a 3-dimensional fashion and in a scaffold-free environment [25]. Spheroids as an alternative to the 2D cell culture, are beneficial because they are 3-dimensional models so when drugs are screened and

tested on them the results are more relevant as to what will actually occur in a complex 3D tissue, such as the heart.

The heart on a chip model consists of a miniaturized cardiac model that is often used for drug testing. Hundreds of different concentrations and combinations of drugs can be tested in the heart on a chip, with iPSC-CMs alone or co-cultured with different cell types, such as cardiac fibroblasts, endothelial cells, or immune cells, allowing for a wide array of experimental conditions to be investigated, with minimal costs associated to the small volumes of cells and reagents required for this model [26].

The use iPSC-CMs in these in vitro drug screening and development models allows for a solution to the high costs and ethical concerns associated with animal testing and can help develop novel treatments for cardiovascular disease.

Healthy and diseased cellular models

Cell and tissue physiological/physiopathological models are another application where iPSC-CMs can be used effectively. These models can be used to test cell function and viability in a healthy or diseased state, such as when cardiomyocytes experience an infarct. Human induced-pluripotent stem cells have the potential to provide an unlimited and patient-specific source of cardiomyocytes which can be used for cell and tissue modeling [27, 28].

Healthy iPSC-CMs have been used in a study in order to predict the response of a certain drug across cell types. A study from Gong JQX. and Sobie EA. developed cardiomyocytes using induced-pluripotent stem cells and discovered that this method was beneficial due to its accurate predictions under multiple experimental conditions considering the responses to certain drugs. These healthy tissues were found to possibly be of great value for future drug development and overcoming the limits of the usual experimental models [29].

In a recent study from Carvajal-Vergara et al, researchers have used patient derived iPSCs to create a model of a CVD, cardiovascular disease. iPSCs were generated from patients presenting an autosomal dominant development disorder called LEOPARD syndrome, and were able to create a celular model of this disorder, enabling them to uncover the signaling pathways associated with the disease [30].

iPSCs have also been used to model dilated cardiomyopathy, DCM, which is the most common form of cardiomyopathy in patients [31]. Researchers used iPSCs derived from patients

who have DCM to generate diseased cardiomyocytes. These diseased cardiomyocytes were derived from patients with a point mutation meaning a single nucleotide in the DNA is different, in this case for patients with DCM it would be in the gene encoding sarcomeric protein cardiac troponin T. This allowed for the creation of disease-specific cellular models to explore the underlying mechanisms of the disease and also optimize treatments and therapy [32].

Another example of diseased cardiac models obtained with iPSC-CMs is the Timothy Syndrome model. Timothy Syndrome, also called long QT syndrome type 8 (LQT8), is a disorder caused by a gene mutation which affects the heart along with several other organs [33]. The iPSCs were derived from the human skin cells of patients with Timothy Syndrome and were differentiated into cardiomyocytes to observe the effect Timothy Syndrome has on the electrical activity and contraction of human cardiomyocytes. With this model, it was possible to reveal that excess Ca2+ influx, irregular contractions along with irregular electrical activity and prolonged action potentials are associated with this pathology. These indications are essential for developing drugs for treatments and for studying the cellular and molecular mechanisms of cardiac arrhythmias [34].

Cardiac engineered tissues for implantation

One additional application for iPSC derived cardiomyocytes is their use for the generation of implantable engineered tissues in hopes of healing the heart after major cardiac events, such as myocardial infarction. Cardiac engineered tissues can be directly injected into the heart or used in combination with biomaterials and implanted into the heart. [35]. Among biomaterials, hydrogels have the potential to be an effective delivery vehicle for cells and growth factors, necessary for heart repair. One example of a hydrogel system for cardiac regeneration is described by [36]. With this work, an injectable polyethylene glycol (PEG)-based hydrogel is developed as delivery system for erythropoietin (EPO) and iPSC-CMs, which are chosen due to their ability to reduce cellular apoptosis and to improve cardiac remodeling post myocardial infarction (MI), respectively. This PEG-based hydrogel improved the function of the heart in a MI rat model, showing great regenerative potential and representing a promising strategy for future cardiac applications [37]

iPSC-CMs have also been used to generate engineered cardiac tissues to be used for implantation. In one experiment from Masumoto et al, human iPSCs were used to derive three

cell types:cardiomyocytes, endothelial cells and vascular mural cells. The cardiomyocytes and vascular cells were used to generate 3-dimensional engineered cardiac tissues which demonstrated myocardial repair, something that is very beneficial for future clinical applications [38].

Human iPSC cardiomyocytes have also been used in combination with other techniques, such as the omental flap, to generate scaffold free cardiac tissues and treat ischemic cardiomyopathy in swine. This experiment demonstrated that the human iPSC-CMs were able to integrate to the host myocardium after the transplant, which is one of the most important factors for treating heart failure using stem cell therapy, and it is also crucial for long term survival of large grafts [39].

One of the major risks associated with the injection or implantation of iPSC-CMs in the heart,is the induction of arrhythmias, i.e. interrupted electrical impulses that cause irregular heart contractions. This may occur with transplanted iPSC-CMs that cannot beat with the same pace of the heart, being mature and possibly unable to electromechanically integrate with the host cardiac cells [40]. Future studies and optimization of the cardiac engineered tissues will be required for overcoming this issue and to grant safe and effective translation of these systems to the clinic.

Conclusion

There are substantial reasons as to why iPSC-derived cardiomyocytes are one of the most beneficial and promising methods for the regeneration of the heart. Unlike other stem cells, iPSCs are pluripotent and able to differentiate into nearly any type of cell in the body and they don't pose ethical concerns. As described in this review, iPSC-CMs can be used to conveniently test and screen hundreds of combinations and concentrations of molecules for drug development and optimization. Furthermore, cellular models can be developed and used to study systems and increase the general understanding of the physiology and pathology of cardiac cells even in complex models of disease, such as myocardial infarction. Finally, iPSC derived cardiomyocytes, alone or along with other differentiated cells, can be directly implanted or injected into the heart to treat severe pathologies. Thanks to this powerful technology and these countless discoveries, there are many opportunities in the future for iPSC-CMs to be used in cardiac regenerative medicine.

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The Friendship of Jane Freilicher and John Ashbery: Ashbery's Realism by Sara Xu

Introduction

John Ashbery was an experimental poet, whose work greatly influenced American poetry in the 20th century. After graduating from Harvard University with fellow poets Frank O'Hara and Kenneth Koch, Ashbery joined the flourishing art and poetry scene of the New York School in the 1960s. He published over 26 poetry books throughout his career and did not shy away from trying different forms and styles of writing. Known for its inscrutability but also gorgeous resonance, Ashbery's poetry has been largely studied and written about by scholars both during his time and after.

Much of the critical work surrounding Ashbery confronts the confusion that often comes with reading his poetry. For example, John Keeling argues in his essay, "The Moment Unravels: Reading John Ashbery's 'Litany,'" that Ashbery aims for misunderstanding in his readers rather than a complete grasp of the meaning of his poetry. Additionally, Keeling believes that such intention aligns with Ashbery's appreciation of the subjectivity of experience. He claims that Ashbery finds a balance between the "chaotic formlessness of unmediated experience and...the seamless cocoon of a fixed moment," and takes the tension between the two as his subject (Keeling 125). He addresses the endless plot points that Ashbery introduces in "Litany" and notes that reading this poem "demands such open mindedness as it grapples with the anything but fixed materiality of our world," which aligns with the common first impressions of Ashbery's work (126). In the rest of his article, Keeling takes the readers through the poem, addressing certain ambiguities but still piecing together meanings of lines, mostly keeping his analysis confined to the text itself without drawing from the broader cultural world that surrounded Ashbery at the time.

On the other hand, Marjorie Perloff writes about Ashbery's style of writing in the context of the New York School and his fellow poet Frank O'Hara in her "'Transparent Selves': The Poetry of John Ashbery and Frank O'Hara." Discussing both poets' early Surrealist phases, she claims that both had not yet understood the poetry emerging from the New York art world and that no accessible precedent to this kind of experimental poetry had existed in American literature at the time (Perloff 175). On that note, she claimed that Ashbery had more successful

writing due to his "calculated oddities" and "strange juxtapositions," infusing intention in his seemingly obscure writing techniques with the general backdrop of the New York School (175).

In his article "Accessibility and the New York School: New Work on Frank O'Hara and John Ashbery," Nick Moudry reviews Andrew DuBois's book, *Ashbery's Forms of Attention*. Moudry shows how DuBois attempts to dispel Ashbery's "fabled difficulty," organizing his analysis of Ashbery's work into stages of Ashbery's career, thus grounding his work in outside influences, such as the New York School community. Moudry addresses the critique that Ashbery's work is inaccessible and claims that DuBois actually reinforces this idea in his book (Moudry 165). While Moudry himself leaves it up for debate whether Ashbery's work was truly inaccessible, or so frustratingly difficult to understand, he seems to support, or at least wants to support, the idea that Ashbery's work can be accessible to readers.

The poets of the New York School, including Ashbery and O'Hara, greatly intertwined with the artists of the New York School, predominantly associated with the Abstract Expressionist movement. O'Hara wrote in his *Larry Rivers: A Memoir*:

> John Ashbery, Barbara Guest, Kenneth Koch, and I, being poets, divided our time between the literary bar, the San Remo, and the artists' bar, the Cedar Tavern. In the San Remo we argued and gossipped: in the Cedar we often wrote poems while listening to the painters argue and gossip… indeed non-literary poets in the sense of the American scene at the time, the painters were the only generous audience for our poetry, and most of us read publicly in art galleries or at The Club

(O'Hara).

The height of Abstract Expressionism took place from 1947-1956. This movement is characterized by its use of biomorphic forms, which were previously employed by Cubists, and reliance on the subconscious mind rather than the rational, a quality derived from the Surrealists, who were obsessed with revealing the subconscious in painting. As Art Historian Gail Levin noted in a lecture at The Guggenheim, Surrealists were about "turning inward for expression," influencing the Abstract Expressionists' highly emotional work (Levin).

The New York School poets proved to be avid audiences for the Abstract Expressionists, often writing art reviews and collecting art. Ashbery himself was an art critic for the European edition of the *New York Herald Tribune* and Paris Correspondent for *ArtNews*, also writing for *Art International* and *Art and Literature* (Monamarco 437). Throughout his lifetime, he collected

art, often pieces gifted by his artist friends, including drawings, paintings, and collages. James Schuyler wrote in his *Statement on Poetics,* "New York poets, except I suppose the color-blind, are affected most by the floods of paint in whose crashing surf we all scramble...In New York the art world is a painter's world; writers and musicians are in the boat, but they don't steer" (Schuyler). Clearly, the art scene had a great impact on the work of the New York School poets.

Recent critics have more specifically written about the cross-connections between Abstract Expressionists and John Ashbery. Notably, in his "That's the Beauty of It, Or, Why John Ashbery is Not a Painter," Clark D. Lunberry dives specifically into how Joan Mitchell's work influenced John Ashbery, arguing that Ashbery took on more experimental risks in his poetry after reviewing one of Mitchell's exhibitions in 1964 (Lunberry 172). In his essay, Lunberry focuses on Ashberry's writing about Mitchell's work to identify what Ashbery admired about it and lay the foundation for Lunberry's argument. He looks closely at Mitchell's *Girolata,* which resembles a "loose kind of landscape," and claims that it has inspired Ashbery to play around with language itself more in his "Leaving the Atocha Station," with his "written images [that] discoordinately dissolve" (180).

Fred Moramarco also writes in his "John Ashbery and Frank O'Hara: The Painterly Poets" about the connections between Ashbery's title poem in his collection, *Self-Portrait in a Convex Mirror,* and Parmigianino's painting after which Ashbery's collection is named. Moramarco also draws in references to Abstract Expressionist Adolph Gottlieb and Gottlieb's idea of verbal thinking in painterly space (Moramarco 436). In his argument, he points out the similarities between verbal and visual juxtaposition, in addition to the intangible images and emotions evoked through both language and painting that appear in Ashbery's poetry. Additionally, Charles Molesworth briefly notes that Ashbery's "He" has elements of an Andy Warhol painting, zooming in on the "leveling of values" (Molesworth 22).

Other scholars have argued that Ashbery was more influenced by the Surrealists than Abstract Expressionists. David Sweet claims that Ashbery inherited an "anti-literary, anti-artistic attitude" from Surrealism, associating more with a type of upgraded, assimilated Surrealism, which rejects automatism[30] (Sweet 317). He claims that Ashbery writes by the principle of Surrealism that one must prioritize depicting a "superior realism," which represents both the

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[30] Automatism is a method of making Surrealist art in which artists let their unconscious rather than conscious mind guide the creative process.

spirit of the writer and the world around it (318). Throughout his career, Ashbery fixated on this idea of a higher truth or realism, which he believed was best achieved through employing imperfect or unnatural elements of language and art.

Similarly, Ernesto Suarez-Toste shows how Ashbery took inspiration from Surrealism but not from the mainstream movement popularly tied with Surrealism. He argues that Ashbery borrowed the use of metaphysical landscapes from Italian painter Giorgio de Chirico and cites both of their interests in the concept of memory and dreams, which account for their "characteristically uneasy atmospheres" (Suarez-Toste 3). Suarez-Toste specifically examines Ashbery's poetry from *Self-Portrait in a Convex Mirror* and *Houseboat Days* to show the similarities in how both artists tie in references to the process of creating work in the work itself (4).

However, one close poet-painter relationship that these scholars have failed to closely examine is Ashbery's long-lasting friendship with Jane Freilicher. While Freilicher's style would not be classified as Abstract Expressionist, she grew up in this movement, studying under Hans Hofmann like the other painters in her generation, and remained in the social circles of other Abstract Expressionists. She tended toward realism, painting landscapes and still-lifes, while still including elements of abstraction. As Andrew Russeth wrote in a review for *ArtNews*, she depicted the "awkward, slippery strangeness of reality—a vase of flowers or a hazy East End day imparting metaphysical significance" in her paintings (Russeth).

According to Ashbery, he met Freilicher on his first day in New York City in 1949, as she lived on the floor above Kenneth Koch, who allowed Ashbery to stay at his apartment (Ashbery 357). Ashbery even recalled seeing her paintings, "some partly geometric, partly loose semi-abstract landscapes," when she invited him to her apartment that day—his first introduction to contemporary art. From then on, the two remained close friends for virtually the rest of their careers and lives, with Ashbery writing reviews of her work and Freilicher often using Ashbery as the subject of her portraits. On her work, Ashbery writes, "Her pictures always have an air of just coming into being, of tentativeness that is the lifeblood of art" (358). On the influential link between Ashbery and the painters he writes about, Lunberry asserts in his article:

> Ashbery has openly acknowledged that "poets when they write about other artists always
> tend to write about themselves" (Reported 106). Not surprisingly, then, in reading his
> review of Mitchell's Paris exhibition, there is the strong sense that, as in so many of his

other reviews of that time, Ashbery is writing about Mitchell's new paintings as a means,

in part, of thinking and writing about his own poetry

(Lunberry 173).

What Lunberry points out about Ashbery and Mitchell also applies to Ashbery and Freilicher, as Ashbery's reviews of painters' works are often great indicators of the elements at play in his own work.

Many scholars have made efforts to grapple with Ashbery's obscurity, emphasizing specific literary techniques in order to do so. However, these works mostly serve to further emphasize the "open-mindedness" required to parse through his difficult poetry, as Keeling conveyed. Additionally, when scholars look at his work through the lens of art, they tend to use the ties within the New York School and the similarities between his poetry and art to highlight the abstraction of Ashbery's poetry, rather than the realism. Especially in the lens of Surrealism, the obscurity and uncertainty of Ashbery's work are put in the spotlight.

Although Freilicher did dabble in abstraction, her representational paintings became what she was known for, and it was these paintings that brought out the realism and accessibility in Ashbery's poetry, which can be often overlooked when his poetry is compared to the art of the New York School. On the other hand, through identifying the connections between Freilicher and Ashbery's work, I will show how Freilicher's work influenced the way Ashbery keeps his poetry grounded in real and comprehensible images while slightly suspended in abstraction. Additionally, the subject matter of her paintings has encouraged Ashbery to draw inspiration from everyday concepts and settings that are universal to his readers.

Chapter I: Realism with a Hint of Abstraction

In 1975, Freilicher held a show at New York's Fischbach Gallery. Ashbery wrote a review for *ArtNews*: "The swift transition from style to style is one of the most remarkable things in Freilicher's painting. The denotative and connotative jostle each other, with no fixed boundaries; a rough tangle of brushwork menaces a sleekly realistic passage" (Ashbery). Here, he references the moments where realism and abstraction may interact in her paintings. He especially notices these instances in Freilicher's *Northeast View*, one of her many landscape paintings.

This painting depicts scraggly bushes of different shades of green in the foreground, framing the viewer's look of the painting in a way with the small hill of wheat-colored grass and the patches of greenery nearby. Behind this elevated knoll is a large plot of smooth land, reminiscent of a golf course, especially with the small pond near the center. Further in the background of the painting, near the horizon line is a larger body of water, appearing to be a bay, with houses and trees along the edge of the water. The sky, taking up almost half of the painting, is expansive and cloudy, with the color of the bluish-white clouds reflecting in the water.

Jane Freilicher, *Northeast View*

Freliicher mostly uses cool colors in this painting, filling up the canvas with calm blues and greens, and the occasionally yellow-brown shade near the foreground. This color scheme brings a serene atmosphere, with not many colors being so bright or standing out conspicuously to the viewer, except for the green of the flat land behind the bushes, which is noticeably less dull than the rest of the colors. She grants more detail to the bushes in the front of the painting and obscures the objects closer to the horizon, such as the houses and trees, making the positioning of the elements in the landscape clear to the viewer. However, the brighter green of the land behind the bushes slightly confuses the perspective of the viewer, as objects further away should be portrayed as having duller colors and less detail. The green color stands out more

than the duller shades of the bushes, which are more detailed with shadows, layering of shades, and careful brushstrokes of each leaf. We may be tempted to first draw our attention to this large piece of land before noticing the bushes that are evidently meant to be in the foreground and thus the center of attention of the painting.

These elements, especially the color scheme and increasing blurriness of the painting as it goes further back towards the horizon, suffuse the painting with an air of tranquility, each "object" or piece of the landscape seemingly represented in its rightful place.

To further understand how the elements of the painting are playing out, we may want to turn to the context of the painting itself. We know that members of the New York School, including Freilicher, often retreated to the Hamptons or Long Island, where we can assume Freilicher painted this painting. Directly titling the painting *Northeast View*, Freilicher is not playing any tricks on her audience, pointing us to the orientation of the Atlantic view in her Long Island home. Additionally, this straightforward title automatically takes us out of the inferencing, scrutinizing state of mind, the mindset which viewers often have to tap into when trying to piece out the non-representational work of the Abstract Expressionists. According to Paul J. Getty Museum, a classical landscape usually contains careful positioning and establishes a balanced and timeless mood (Brief History of the Landscape Genre). Freilicher certainly returns to this standard in this painting, mindful of the details that make clear the arrangement of the objects in the landscape, holding her ground in a field and era commanded by abstract painters.

Still, upon a second look, the painting may spark some uncertainty. For example, the bright color of the land that ought to be fading into the background can be confusing to the eye. This characteristic of the painting prompts the question of why that land is not in the foreground instead of the bushes. In fact, this tension may even lead the viewers to wonder why Freilicher chose to highlight, much less include, the bushes in the painting in the first place. Why add so much detail to a seemingly unimportant aspect of the landscape? Why portray them in such an unfiltered, unkempt way when the rest of the painting seems so polished and clean? Why make the color of this land brighter than the rest?

Ashbery seems to address some of these questions in his review of this painting. He notes, "'Non-representational' painting is always lurking in the background, or the foreground for that matter, of an ostensibly straightforward account of a landscape, and of course landscape is like that; the eye deals with some of it and neglects the rest" (Ashbery). He emphasizes the

way viewers tend to focus on certain aspects of the landscape at a first glance, only noticing the oddities of the painting afterward. Through his description, he shows how Freilicher includes moments of abstraction in her representational art. To give an example, he adds, "The viewer imagines he is looking at an 'objective' account of trees or a table top without realizing that they have been dismantled and put back together again almost seamlessly" (Ashbery). Assuming that Freilicher has gone through this kind of process in *Northeast View*, we could begin to understand that the way each part of the landscape is portrayed—and the confusion that comes with its portrayal—is intentional.

Still, Ashbery appreciates the representational elements of her painting, writing, "The Long Island landscape is beautiful, though not spectacularly so in reproduction, whether photographic or painterly: its beauty is more a question of light and atmosphere, both singularly pure and precise because of the nearby ocean" (Ashbery). His use of "pure and precise" indicates that he admires the clarity and detail of the landscape, characteristics that are not often used to describe Abstract Expressionist paintings. This comment shows that he may take more inspiration from the concrete than people tend to assume. In fact, he claims, "[Freilicher] reinstates that higher naturalness which can only become visible with the help of a little artifice." Interested in this idea of a "higher truth," Ashbery seems to believe that the non-representational or "artifice" can bring out a more realistic portrayal.

Admiring the way she handles images and their emotional associations, Ashbery replicates these elements in his *Self-Portrait in a Convex Mirror,* which was also published in 1975. Especially in his "As One Put Drunk Into the Packet Boat," he introduces imagery in a way that sparks a sense of familiarity or understanding in the reader, yet can be difficult to completely piece together in the context of the poem. On this note of blending in abstraction to achieve greater realism, Ashbery also employs phrases that seem unnatural, sparking emotional reactions. As Susan Stewart pointed out in her article, "I Was Reading and Rereading Ashbery's 'Self-Portrait' for Many Years: 'Self-Portrait in a Convex Mirror,'" the title of Ashbery's poem was taken from the first line of Andrew Marvell's poem, "Tom May's Death," about the life and afterlife of a man who died drunk (Stewart 312).

In the first line of the poem, Ashbery writes, "I tried each thing, only some were immortal and free" (Ashbery 1). Without knowing what "things" he was trying, and what "tried" really implies, we can still grasp that he is referring to the idea that not all things are everlasting

and unconstrained—adjectives that bring us into the broader discussion of human aspirations in life. He continues to provide concrete images to help ground our thinking: "Elsewhere we are as sitting in a place where sunlight / Filters down, a little at a time" (2-3). There are some confusions with the grammar, especially with the phrase, "we are as sitting;" however, we can clearly picture the image of sunlight peeking through layers of a tree, an image that often appears in nature. A couple of lines later in the stanza, he writes, "Harsh words are spoken, / As the Sun yellows the green of the maple tree…," and further grounds us in the natural world by depicting images of the autumn season (4-5). While we do not know the context of these "harsh words" or for whom the narrator is waiting to arrive, these images do much to help convey a tension between an unpleasant social situation and a gorgeous setting, in addition to the idea of the cycle of life, which often links to the progression of seasons. The images here do appear to be "pure and precise," as Ashbery characterized Freilicher's landscape.

In the next stanza, he begins, "So this was all, but obscurely / I felt the stirrings of new breath in the pages / Which all winter long had smelled like an old catalogue. / New sentences were starting up" (6-9). Most of us can grasp the scent of a dusty book that had been put away for a while, "all winter long;" however, on a deeper level, the discussion of winter also draws back to the theme of seasons, and more specifically, the concept of death and endings. The latter association can be juxtaposed to the idea of a "new breath" and "new sentences," reminiscent of the beginnings that come along with spring. Ashbery helps make these concepts more approachable by introducing them with a tangible or universal image, in this case, the "scent of a dusty book," helping us through his abstraction towards a better understanding of the lines. He adds more to the theme of seasons: "But the summer / Was well along, not yet past the mid-point / But full and dark with the promise of that fullness, / That time when one can no longer wander away" (9-12). He seems to convey that the "promise" of all the good that comes with summer is still yet to come, perhaps associating the positive energy of summer with the idea of strong relationships. The idea of wandering away also connects back to the mention of "waiting for someone to come" in the fourth line of the first stanza. We can already see that, while Lunberry writes about Ashbery's poetry as a "blur of unsustainable association, [from which] a veritable rush of words pours forth," the images in this poem do contribute to recurring themes and encompassing messages, especially concerning seasons and passage of time.

He begins the third stanza with "A look of glass stops you / And you walk on shaken: was I the perceived?" (15-16). The phrase "a look of glass" appears to be a play on the word, 'looking-glass,' thus immediately pointing to the idea of observation. In her reflection of the poem, Stewart also writes that this line represents "a moment of fleeting semi-self-recognition that can happen any ordinary day in any ordinary shop" (Stewart 2). However, his warped phrase succeeds in prompting more complex considerations of what it means to have eyes "of glass." Perhaps the look was one that resembled glass, characterizing the looker's thoughts and state of mind as transparent, or the look makes the perceived feel like glass. Similar to Freilicher's technique that he identified in his review, Ashbery "dismantles" and "puts back together" a common object like a looking-glass to bring an elevated meaning of perception to the phrase.

His next question indicates a real and familiar wondering that many people have: "Did they notice me, this time as I am, / Or is it postponed again?" (17-18). Vaguely understanding that we are put in the perspective of the "you" in the first line of the stanza, which turns into the "I" in the next line, we can relate to the excitement infused in the idea of being seen or noticed. Ashbery does not specify who is doing the noticing, nor what "I" is being noticed for, but still, we can feel the disappointment at the thought of postponement. He represents this string of emotions well in his next image: "Clouds that arise with a swift / Impatience in the afternoon sky, then dissipate / As limpid, dense twilight comes" (19-21). Again, he uses the tangible image in nature of clouds in the sky to convey his abstract ideas of rising and falling feelings of anticipation. Next, he writes, "I thought / The great, formal affair was beginning, orchestrated, / Its colors concentrated in a glance" (23-25). While we don't know exactly what the "great, formal affair" is, we can more easily imagine the way "concentrated" colors may appear at "a glance," perhaps referencing the experience of seeing something brilliant or striking only briefly.

In the fourth stanza, Ashbery poses the question, "The prevalence of those gray flakes falling?" (28). By using the demonstrative pronoun "those" to describe the "gray flakes," he further confuses our understood role in the poem. In this line, we as readers are assumed to have a set perspective in the poem, as we feel as though we ought to know something we don't—what exactly the gray flakes are. He continues, "And I thought a shadow fell across the door / But it was only her come to ask once more / If I was coming in, and not to hurry in case I wasn't" (31-33). Reading Line 31, we can vividly imagine a shadow passing over a door, and in the next two lines, we can recognize what sounds to be a familiar, everyday communication from one

person to another. Still, this narrative gives rise to interesting considerations beyond these simple images, such as the possible significance of mistaking someone for a shadow or reasons why this "her" repeatedly asked the narrator to enter through the door.

He sets up his last stanza with another clear yet complex image: "The night sheen takes over. A moon of cistercian pallor / Has climbed to the center of heaven, installed" (34-35). He establishes the image of darkness surrounding the moon in the sky, complicating the sentence with the unusual descriptor "cistercian pallor." He adds, "And a sigh heaves from all the small things on earth, / The books, the papers, the old garters and union-suit buttons / Kept in a white cardboard box somewhere" (37-39). These objects convey a sense of universality, as we all have some sort of container of our own like this box that holds these common trinkets and objects, though his phrase "all the small things on earth" depicts them on a greater scale. While the idea of "a sigh" heaving from these objects is quite abstract, it also begins from the endearing image of all the little things across the globe releasing a breath—whether the breath is out of relief, happiness, frustration, is still unclear to us. He continues to describe, "All the lower / Versions of cities flattened under the equalizing night" (59-40). These lines prompt us to imagine the night sky literally pushing down on the tops of skyscrapers and obscuring the differences between aspects of a city that would otherwise be noticeable in the daytime. In his last two lines, Ashbery leaves us with a concept we can grasp: "The summer demands and takes away too much, / but night, the reserved, the reticent, gives more than it takes" (41-42). This sentence is clearly-structured, drawing together ideas and themes discussed throughout the entire poem. He explains that while summer is known to represent the best eras of life with the winter symbolizing the opposite, it is summer that disappoints (perhaps because of these existing expectations) rather than the night, which offers more. He says something greater about our assumptions about life in comparison to the truth.

Overall, through his clear and universal images, Ashbery grounds the vague contexts and twisting of words in his poetry into overarching themes of relationships, our expectations in contrast with the truth, and the ups and downs of life. His use of both realism and abstraction here reflects what he admires about Freilicher's painting: the way the nonrepresentational elements of the painting underlie the realistic landscape.

Chapter II: Subject Matter

  Later in his review on Freilicher's gallery, Ashbery wrote, "Nothing is made to look more important than it is, some things are even kidded a little...Everything is free to be itself, nothing is too tentative or modest to be included in her factual but generous account of what she sees" (Ashbery). He seems to admire the way Freilicher chooses and represents her subject matter; whether in her *Early New York Evening* or *Objects on a Table*, she chose to paint the relatively simple things around her—the view outside her apartment or the fruits laying on a table. Still, Ashbery stated that "her work is rich in meanings that continue to resonate with us even after we have moved on," appreciating how her humble subject matters can convey complex meanings.
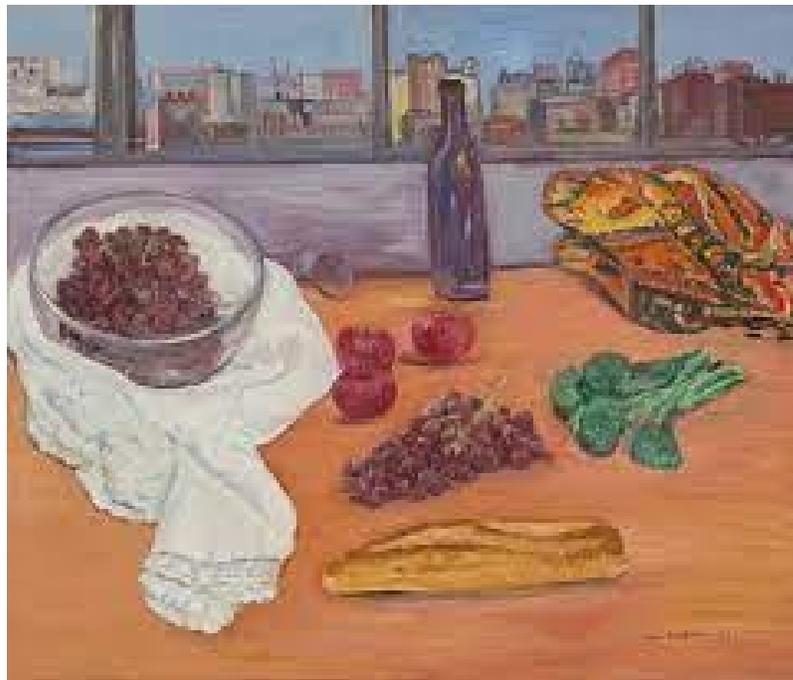
Jane Freilicher, *Objects on a Table*

  In Freilicher's *Objects on a Table*, there are food items laid out on a table, including a bowl of grapes wrapped in a towel, three apples, a baguette, what appears to be another bunch of grapes, a stalk of broccoli, an opened bottle, and a patterned bag, perhaps the grocery bag, in the corner of the table. In the background of the painting, there is a wall with a row of windows showing the New York City skyline against a blue sky.

  There is a lack of shadows in this painting, indicating that the painting was done during midday, in low light, or in artificial light. Additionally, the objects on the table are painted with

visibly a little more detail than the wall and city skyline in the background in terms of texture and highlights. Looking at this painting alongside Freilicher's *Twelfth Street and Beyond*, we can get a better grasp of the perspective at which she is painting; it seems as though the table and view are the same in both of these paintings, which means we can assume that what we see in *Objects on a Table* is a zoomed up view of the table and window in *Twelfth Street and Beyond*. Using *Twelfth Street and Beyond* as a foundation for our understanding, we also know that this is most likely Freilicher's everyday view from her apartment on the Lower East Side of Manhattan, based on the street name. Similar to *Northeast View,* this still-life instills a general sense of satisfaction—each object on the table is well-represented, generally recognizable as everyday food items or just objects that one would have after a grocery run, for example.

Jane Freilicher, *Twelfth Street*

However, the perspective and scaling of the objects in the painting in relation to each other, in addition to the rest of the room, is even more blatantly off in *Objects on a Table* than in *Northeast View.* For example, the bowl of grapes is not depicted at the same angle as the rest of the items on the table, having been drawn more titled, showing more of the top of the bowl so that the audience would be hypothetically viewing the bowl higher over the table. The rest of the objects are all drawn less tilted, which makes it seem as though we are looking at the same table

at different angles simultaneously. Additionally, the sizes of the objects are incorrectly scaled in relation to each other. When observing the three apples, we can see that they are all the same size; however, according to the rules of perspective, the apple closer to the viewer ought to be larger than those farther away. Furthermore, she puts a lot of detail into the painting, especially in the window view, which also does not align with the general rules of perspective, where the background has less detail than the foreground. These elements both add to the warped perspective of the viewer. Furthermore, the objects are spaced out rather evenly, not how food items would usually tumble out of a grocery bag or laid out after taking them out of a bag, indicating that this was a more orchestrated setup by Freilicher.

Looking outside of the objects themselves, we can also notice how the angle at which we view the table does not match that of the wall and windows behind the table. While Freilicher positions us to look at the back wall and windows straight on, as if we are standing parallel to the wall, the table and its objects as a whole are angled more as if we are looking down, slightly over them. These elements, in addition to the zooming in of the table so that the edges are not in view, all contribute to the incoherency we sense from the painting.

Considering the painting in the context of the Abstract Expressionist movement, which was often criticized for producing paintings that were out of touch with society and current events, we can understand that Freilicher was grounding her paintings back in the real world. She represented everyday sights through common subject matter, in contrast to the drips and blocks of color that pervaded the New York art scene at the time. In fact, the title of her painting and the clear representation of the New York City skyline further establish a sense of reality for the reader, attaching the painting to a real place. Yet with the unorthodox manipulation of the perspectives and scaling of these simple subject matters, Freilicher adds a more complex sheen to the painting, forcing us to consider why she chose to vary the audience's point of view for different parts of the painting and why the objects themselves were so staged. Additionally, the details she includes in the paintings, especially of the skyline, may help in indicating a resonating theme or overarching message of the painting.

On her subject matter, Ashbery writes in his review, "Obviously she paints what she sees, but it happens that she sees a lot." In appreciating what Freilicher chooses to paint itself and how she portrays it, Ashbery seems to especially admire the level of detail and meaning that she infuses into her subject matters. Additionally, he specifically mentions *Objects on a Table*: "Two

of the still-lifes, *One Cat, Two Fish* and *Objects on a Table,* are miniature cosmogonies: all things in them co-exist and are allowed their idiosyncrasies, as is subtly indicated by the varied handling of paint" (Ashbery). He seems to appreciate her confidence to leave each of the simple objects on its own in relation to each other, even though the relation may be skewed or idiosyncratic. He recognizes that in this painting, she does not clean up the look of the objects or how they fit in with each other on the canvas. More specifically, Ashbery points out that "the cityscape outside has a Guardi-esque fluidity, but on the table things are less easy: some objects (the loaf of bread, a branch of broccoli) are deftly encompassed; others are allowed to appear as problematical, as recalcitrant to easy solutions as they would have looked to Cézanne" (Ashbery). He notices the realistic city view and how they contrast with the more unusual representation of the objects on the table.

The very characteristics which Ashbery notices and praises—the simple yet detailed subject matters which meaningfully coexist—are present in his own poetry, published around the same time as her gallery in the 1970s, and especially in his poem, "Forties Flick." Ashbery draws inspiration from film noir and pop culture from the 40s but also mocks it in this poem, addressing the artificiality of these films. In addition to the characters and main action of the scene, he describes many of the small details of the setting in the poem, showing how he too was more inclusive in his account of the subject matter in his poem.

Ashbery begins this poem with a succession of images: "The shadow of the Venetian blind on the painted wall, / Shadows of the snake-plant and cacti, the plaster animals" (1-2). He highlights objects in what we assume to be a room of some sort, but rather than explaining the objects themselves, he identifies them through their shadows, zooming even closer into the details of the scene. The objects themselves are relatively common in a household: folding blinds, houseplants, decorative animal statues. Yet, the way they are classified with such specificities, like "Venetian blind" and "snake-plant," almost deems them unrecognizable at first, serving to establish an eerie atmosphere surrounding the objects. From the beginning of the poem, Ashbery complicates an otherwise straightforward list of objects which coexist rather than directly interact, similar to the way Freilicher's objects simply sit on the table but in warped relations to each other. In the next line, he gives an order: "Focus the tragic melancholy of the bright stare / Into nowhere, a hole like the black holes in space" (2-4). He seems to reference the "bright stare" of a spotlight, demanding to "focus" the light into the darkness. As normally, a

spotlight would shine at and follow around a character in the scene, we can understand that this "hole" is standing in for whichever part of the scene is being spotlighted. Thus we can link the character or scene under the spotlight to "the black holes in space"—mysterious and empty and tumultuous. Characterizing the spotlight with "tragic melancholy," Ashbery echoes the dark and dramatic nature of film noir. He continues to set up this realistic scene with a director-like command but also establishes that there is more going on under the surface, similar to the way Freilicher twists the portrayal of her simple subject matters to unveil the deeper questions surrounding the painting.

Next, he writes, "In bra and panties she sidles to the window: / Zip! Up with the blind. A fragile street scene offers itself / With water-thin pedestrians who know where they are going" (5-7). Ashbery writes with a theatrical tone, describing a sexy and slinking female character and the movement of the blinds with a "Zip!" The language in Line 6 reflects captions of a comic, subtly grounding this poem in pop culture rather than elevating the subject matter. Additionally, by describing the pedestrians, seemingly "wafer-thin" due to the window being significantly higher than the street, as "know[ing] where they are going," Ashbery signals that this scene most likely takes place in a bustling city of pedestrians walking with the intention to get from one place to the next. However, taking these descriptions in the context of the wider production of the scene, which Ashbery already alludes to through his command of the spotlight, we can also understand these pedestrians to perhaps be extras or actors who know where they are going because their paths were already traced out for them. This interpretation reminds us that this scene is scripted and directed by someone else rather than being real, which adds another, slightly eerie, layer to how we view what is presented to us in this poem. He ends the stanza with the blinds coming back down, as "the slats are slowly tilted up" (8).

In the next stanza, Ashbery takes the poem outside of the scene, as he begins to comment on the elements of the scene, more explicitly discussing how the scene is produced. This discussion seems to be his way of addressing and highlighting the "idiosyncrasies" of the subject of the poem, as he described the objects in Freilicher's painting. He poses the question: "Why must it always end this way?" and inquires about the significance of how the scene ends. This question activates a philosophical level of interrogation that we normally do not dedicate to TV shows or other forms of entertainment. Again, this question serves to deepen the representation of the otherwise simple subject matter, very similar to the questions we have about the way

Freilicher manipulates the elements of her painting. In the following lines, he writes, "A dais with woman reading, with the ruckus of her hair / And all that is unsaid about her pulling us back to her, with her / Into the silence that night alone can't explain" (10-12). Here, he zooms in on specific details, which we assume he refers to in his question. His description of "all that is unsaid" and the women "pulling us back to her" seems to reflect a mysterious attraction that "we" or the audience of these shows have for such characters in these shows. Furthermore, we may associate this phrasing with the earlier discussion of the black holes, as Ashbery expands on the unexplainable uncanniness of these characters.

Later, he discusses, "But we didn't have to reinvent these either: / They had gone away into the plot of a story, / The 'art' part—knowing what important details to leave out / And the way character is developed," the first person pronoun in the first line now seeming to represent the producer or directors of the whole production (14-17). Here, he dives into the more analytical description of what's going on with the elements of the seem. While it's not entirely clear what is being "reinvent[ed]" or what has "gone away into the plot of a story," we can get the sense that some element, perhaps that which prompts further questioning by the readers, gets sucked away or lost in the process of building plot. He also addresses the process of developing character—"the 'art' part," as he describes it. Similar to Freilicher's apparent staging of the objects in the painting, Ashbery alludes to the behind-the-scenes work of creating art or a production, forcing us to understand the content of the poem as man-made or scripted. By bringing in the idea that the work was created by some human, both Ashbery and Freilicher introduce their choices and intentions when creating work, in their works themselves. Expanding on this idea, Ashbery writes, "Things too real / To be of much concern, hence artificial, yet now all over the page" (17-18). He brands the "things...all over the page" as being artificial, reaffirming that everything we see in entertainment is manufactured, especially the "too real" details that are not "of much concern" to the readers. In the next lines, he writes, "The indoors with the outside becoming part of you / As you find you had never left off laughing at death" (19-20). While these lines are more difficult to piece together, the contradictory ideas present in the lines stand out, such as the "indoors" and "outdoors" coming together and the concept of "laughing" being paired with "death." This line contains examples of what Perloff described as "strange juxtapositions," which serve to trigger an emotional reaction from the reader, nudging us towards a more associative understanding of the poem (Perloff 175). More specifically, the

contrasts further unsettle us, forcing the audience, or the general "you," to think about what we have been laughing about this whole time and what has been "becoming part of" us. He ends the poem with a final descriptor: "The background, dark vine at the edge of the porch" (21). He points out a detail of the set that lurks more in the "background." While he describes a simple "dark vine," leaving it isolated in this line and as the final detail of the poem gives it a strange and unsettling sense, which resonates with the reader as the underlying mood across the entire poem.

Taking inspiration from Freilicher's simple and everyday subject matter, which imposes a thought-provoking sense of complexity on the reader, Ashbery writes about popular media and entertainment. He infuses deeper ideas, such as our attraction towards watching characters and shows despite the artificiality of TV, into a seemingly mundane matter. Additionally, Ashbery confronts the reader, making us feel unsettled and more inquisitive of what is going on in the scene he presents, similar to the way Freilicher employs differing perspectives of the audience in her painting, pushing us to wonder about the role of the artist and what she is trying to say about her subject matter. Still, Ashbery's subject remains rooted in an everyday aspect of society, contrasting greatly with Keeling's impression of Ashbery's "Litany," which "grapples with anything but the fixed materiality of our world" (Keeling 126).

Conclusion

In this essay, I have pointed out two ways that Ashbery reflects the representational yet abstract aspects in Freilicher's paintings in his own poetry: through his clear and recognizable imagery, and everyday subject matter. Looking at works that have been produced by the two artists in the same time period, I draw connections and similarities between the works. In the first chapter, I analyzed Freilicher's *Northeast View* and Ashbery's comments about this painting, and I pointed out where Ashbery employs similar techniques in his "As One Put Drunk Into the Packet Boat," which help guide the readers to better understand his work. I follow a similar line of reasoning in the second chapter, observing how Freilicher depicts her simple subject matter in *Objects on a Table*, what Ashbery takes away from this painting, and how these influences appear in his own "Forties Flick."

Through identifying Freilicher's influence on Ashbery's work, I hope to shine a light on this lesser-known artist, whose more accessible yet deeply complex works held their own against

the male-dominated world of abstract art in New York City. Freilicher was an important figure in Ashbery's life and career, and one that should not be neglected when considering Ashbery's ties with art, especially as she seemed to unlock the less-emphasized aspect of realism in Ashbery's work. Of course, there are still confusing moments of abstraction in his poetry, in classic Ashbery style; however, they are less dominant and blurring of our understanding of these poems when read in the context of Freilicher's work. Thus, understanding Ashbery's relationship with Freilicher and her work is critical to dispelling the popular narrative that frames Ashbery's work as inherently inscrutable and inaccessible.

Still, this essay just provides a glimpse of one point in these two artists' friendship and careers. Studying the works I discussed in relation to the wider evolution of their work could shine a brighter light on how Ashbery's poetry grew to be more representational. Additionally, we may further question: What other artists, both abstract and representational, have influenced Ashbery's work? How might one digest Freilicher's influence on his work along with the other rich connections Ashbery had with Abstract Expressionists? What other patterns of clear realism are prevalent in his work? My essay can act as the starting point to opening up the powerful messages and resonating emotions in his poetry to more readers. And perhaps taking this lens of realism when approaching Ashbery's work brings us closer to his own goals of creating a sense of universality for all his readers, to make them feel something they can recognize and even learn from in their own lives—the heart of what makes his poetry so captivating.

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Equality in Admissions by Gloria Bao

According to the Oxford admissions statistics, in 2020, the number of admissions made in Oxford University was around 3,300 for undergraduates and 5,500 for graduate students. Generally speaking, there are more than 23,000 people who apply to the school and over 34,00 who apply for graduate study there. The offers to the students are made based upon the student's A-level scores (if they are from an A-level curriculum school). The scores of the students will range between A*A*A and AAA. For students who are accepted with a conditional offer, the university may require a student to pass a certain A-level for a certain major in order to get the offer, which could mean achieving a grade on a certain language exam or other exams. Considering the excessive demand for undergraduate places in Oxford yet the limited supply leading to scarcity and a question of allocation, the current admissions process favors students with better academic abilities. There are possible inequalities underlying this admissions process, as the current admissions process favors students who are socially or economically advantaged. Therefore, in order to have equal admissions, we must find a new admissions process that is able to account for socio-economic differences in student backgrounds.

In order to better analyze the current admissions system, it is imperative to define the term "fairness". A reliable way to examine the fairness of an admissions system is John Rawls' test of "original positions". This test is conducted under the assumption that the people who are a part of the test "are biased by their knowledge of their particular circumstances." Policies that are reached under the "veil of ignorance" are more likely to be fair, as the incentive of every person involved would be to create a test that is fair regardless of their social-economic background or race.

When it comes to Rawls' test of original positions, Oxford University's current admissions policy is unfair since poor students do not have an equal chance of acceptance as rich students. "Seventy-four percent of the students at the top 146 highly selective colleges came from families in the top quarter of the socioeconomic status scale (as measured by combining family income and the education and occupations of the parents), just 3 percent came from the bottom socioeconomic status quartile, and roughly 10 percent came from the bottom half of the socioeconomic status scale." In 2020 alone, only 15.9% of all Oxford admissions come from

families of ACORN levels 4, 5, and 6. While there is an increase in the number of poor students admitted from previous years, it is still not equal enough to pass the John Rawls' test, as socio-economic background still plays far too heavy a role in admission decisions.

Such an unequal social-economic acceptance rate at Oxford exacerbates inequality for students, especially students from lower ACORN level families, who see their future social mobility prospects lowered. Using data from social mobility trends based on higher education in the USA, we can infer certain trends in the UK. "Societies with high inequality normally exhibit both high private returns to graduates compared to the returns to school leavers—as is the case in the United States and the United Kingdom at present." Highly selective colleges have advantages such as high graduation rates, offer students more subsidies, greater post-college access to resources, and a small, but present, wage gap. Students who are not accepted into secondary schools are deprived of the benefits offered by higher education such as wage premium. Thus, the unequal allocation of college seats widens the inter-class income gap. Inequality in the Oxford acceptances can thus exacerbate inequality in the UK, greatly decreasing social mobility.

Although the socio-economic policies of Oxford admissions may not be fair, in terms of the racial distribution, the admission process is fair. For admissions to be fair, the proportion of applicants from each ethnic group within the UK should mirror the proportion of people in each ethnic group in the UK. The racial demographics of the UK sees white ethnic groups having the largest proportion at 86%, while "people from Asian ethnic groups made up the second largest percentage of the population (at 7.5%), followed by Black ethnic groups (at 3.3%), Mixed/Multiple ethnic groups (at 2.2%) and Other ethnic groups (at 1.0%)." The admissions at Oxford therefore, are very close in proportion to the population racial proportion. The acceptance rate of white students is around 78.5%, Asian students are around 12.9%, Black students are around 2.1%, and other minorities are around 6.6%. Since the acceptance rate is close to the population ethnic distribution, the racial acceptance rate of Oxford university is relatively fair. Though the current Oxford admissions policies may not be fair in terms of socio-economic status, it is fair in terms of race.

In order to address the current inequality in admissions, we may be able to get inspiration from other methods of college admissions around the world. One option to consider is the American system of admissions, which heavily weighs the extra-curricular activities of a student. The academic expectations of the UK are for students to excel in the major that they are applying

to, whereas American colleges and universities want students who both excel in one subject and students who are all-rounders. Unfortunately, like the current system of Oxford, this system of admissions is not able to pass the test of John Rawls' "original position", as this system of admissions favors students from higher socio-economic backgrounds, who are more likely to have a diverse range of extra curricular activities on their application.

It is important to acknowledge that there have already been significant movements in the Oxford admissions criteria towards greater equality, and the impact of familial background in secondary education has seen gradual decrease. "Our policy simulations confirm that the net impact of education expansion over the last fifteen years has been to reduce income inequality, especially in emerging and developing economies. Although the magnitude of the net impact on income inequality varies across emerging and developing economies, it is always inequality reducing." And Oxford statistics show that the amount of students from ACORN levels 4 and 5 have increased from 12.2% to 15.9%.

In order to satisfy John Rawls' the test of "original position", students from socio-economically disadvantaged backgrounds who are qualified as students from more advantageous families should have an equal probability of getting accepted into Oxford. Income thus plays a mitigated or even irrelevant role in the admissions process. A potential way to increase the fairness of admissions at Oxford is to use a scoring system similar to one of the Chinese National College Entrance Examination (NCEE). In the NCEE, certain circumstances will get students extra points on the exam. For instance, if a student is from a minority, a non-Han ethnic group, they will get up to an extra 50 points on the exam. Students from poorer parts of the country also get added points.

In the case of Oxford, we would apply this by creating a point-system for students based on characteristics of their socio-economic background such as their family's classified ACORN level, and the area of the country they are from. For instance, students from more disadvantaged families will get higher points in the point-based system of evaluation. The higher the student's ACORN level, the higher the additional points. The point value for each ACORN level and each part of the country would differ based on what is needed. This would be determined on, for instance, the wealth distribution of Great Britain in that particular year. In the case as shown in

figure 1, students from the North East of Great Britain would get more points added than a student from the South East.[31]
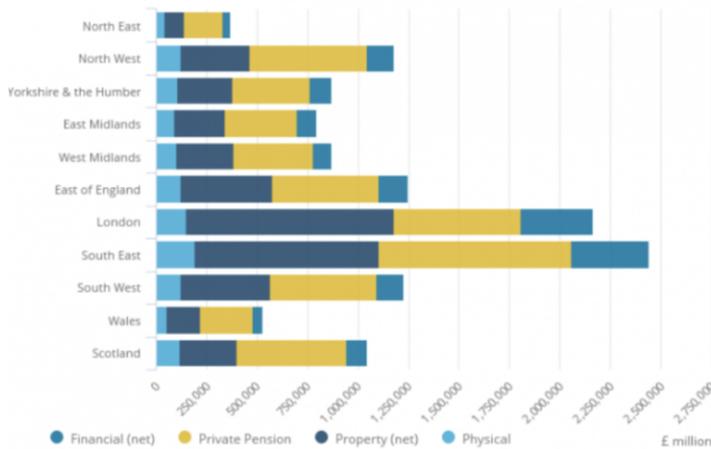
(Figure 1)

This is a policy that would pass John Rawls' test of "original positions", as it makes it more likely for a student of a disadvantaged socio-economic background to have the same chances of acceptance as a student from an advantaged background. Using the Second Fundamental Theorem of Welfare Economics, when no one economic change can be made to better someone without worsening another, one can achieve any particular Pareto optimal outcome by enacting a lump-sum wealth redistribution and then letting the market take over. The conditions for this are that there is exchange, production and output efficiency, which we can assume is because there is a scarcity of resources, in this case the admissions at Oxford, which forces the market to automatically attempt to find the most efficient distribution. This is what this policy proposes to do, though instead of redistributing wealth we are redistributing the "points" in a point system of admissions.

This policy has its limitations. To attempt to solve inequality in college admissions, even if only in Oxford, by separating students into ACORN levels would still mean that students who are better off in their respective levels would have a higher chance of being admitted. There is also an underlying condition to a Pareto outcome, which is that the marginal rate of substitution between any two products must be the same for every individual who consumes both, which we

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[31] Aggregate household wealth by region for 2014-16, ONS: Wealth and Assets Survey, 2018.

can not ensure is true for every applicant to Oxford. It is also considerably time consuming to determine each point value of each district or area annually, and would require funding and other economic expenses. Nonetheless, such a policy would better pass the theoretical John Rawls' test than the current Oxford admission policy, and as such would be a more optimal approach to admissions.

In conclusion, the current admissions policy at Oxford is not fair in terms of socio-economic background. This leads to further inequality in students' lives after secondary education, because the social mobility and future job prospects of a student is greatly decreased depending upon the school they go to. However, the inequality could be addressed by many ways, one of which has been discussed in this essay: the school could choose to use a "point-adding" system to give students of lower socio-economic background more equal chance to get accepted as students from higher backgrounds. Due to the limitations of this essay and information, we were not able to analyze every aspect of inequality within the Oxford admissions process and therefore are unable to address some of the other underlying issues, which in turn could result in the policy proposed being incomplete. While the policy may not be able to perfectly satisfy John Rawls' test of fairness, it is an improvement from the current system in which socio-economic background plays too heavy a role.

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A Review of George Orwell's *1984 by* Jordan Liu

In the novel *1984*, George Orwell intends to illustrate the horrors of totalitarianism and focuses intricately on the struggles of the protagonist Winston. As an Outer Party bureaucrat, Winston enjoys more amenities than the working class but obeys the direction of the ruling class, the Inner Party. This "middle-class" perspective appeals most to Orwell's largely middle-class audience, but fails to show how totalitarianism threatens other classes equally. While the middle class suffers in a constant state of terror and powerlessness, *1984*'s totalitarian regime oppresses the working class considerably less.

Winston desires power in the form of free will, but the state controls his life. Dissatisfied, he rebels against the state's authority, desiring empowerment and greater status. To keep the middle-class subordinate, the state weaponizes fear. The Thought Police's surveillance, the disappearance of colleagues, and the possibility of losing his status all agitate Winston. Terror diminishes Winston's rebelliousness into frustrated compliance, but not all in Oceania share his struggle

Although Orwell characterizes the middle class as afraid, he characterizes the working class as indifferent. With simple stimuli from pornography and gambling, the state has commodified the proletariat into homogenous, passive "proles". Despite their commodification and low quality of life, the toiling masses enjoy certain rights and freedoms that the Outer Party lacks. Unlike Winston, the proletariat barely interact with the police and need not adhere to strict Party doctrine. The totalitarian state accommodates criminal elements within the proletariat. When the Thought Police imprison Winston, he notices that the guards trust common criminals with favorable positions, while leaving dirty work for Party prisoners. Here, Orwell projects his fear that under totalitarianism, the ruling class may cooperate with some of the proletariat to oppress the middle class. This fear undermines his intention to depict totalitarianism as universally harmful, since Oceania's regime represses some social groups severely, hardly interferes with others, and favours a select few.

Nevertheless, Orwell skillfully shows how totalitarianism destroys the ambitions and welfare of the middle class. Winston's attempts to assert power over the state leads to his captivity and "rehabilitation" at the hands of O'Brien, an Inner Party member. Despite physical and psychological torture, Winston resolves to resist and retain his sense of power. O'Brien

utilizes fear to dehumanize Winston into a passive, orthodox product. The climax, in which O'Brien exploits Winston's musophobia to force Winston to renounce his lover Julia, proves the Party's absolute control over Winston's soul, though readers without musophobia may find the climax less impactful. Winston's capitulation horrifies readers who share Orwell's middle-class values. *1984* presents a compelling warning about the dangers of totalitarianism to the status and power of the middle class, but fails to provide all classes a warning equal in scope.

How the Mongols Affected the Societies of Eurasia by Jordan Liu

Abstract

Through their conquests and rule, the Mongol Empire shaped the development of societies across Asia and Europe. Their empire facilitated commerce and the exchange of culture, technology, and statecraft among societies once largely isolated from one another. This paper seeks to understand to what extent the Mongols impacted the economies, states, and cultures of Eurasia.

Introduction

"In Heaven there is only one eternal God, on earth there is only one lord, Chinghis Khan." Such was the doctrine of Chingis (Genghis) Khan, who had founded the Mongol Empire by uniting the clans and tribes of the Mongolian steppe into a highly-mobile, effective military force that conquered China, central Asia, the Islamic heartlands, and parts of Eastern Europe. The initial effect of the Mongol conquests was widespread terror that reached as far as England, where messengers brought news to King Henry III in 1260 that the mysterious "Tartars" (i.e. Mongols), depicted as enemies of God, had brutally sacked Baghdad, the capital of the Abbasid Empire, and were advancing further towards Europe. In the early thirteenth century, the Novgorod Chronicles likewise describe the invading Mongols as "the accursed ones" and "wild beasts". However, a period of general peace in the late thirteenth century, which involved the extension of the Silk Road around the Black Sea to Europe and a series of friendly Mongol diplomatic missions to Europe, quickly reversed attitudes from absolute confusion and fear to camaraderie and respect. The Mongols' image changed from scary, unknown barbarians to partners and friends. In the end, the Mongols did not unite the world under one god and one ruler, but their empire made a radical step towards global unity, as societies between Europe and Asia, once completely unknown to each other, came into regular contact and exchange in the fourteenth century. By reorganizing the disparate tribes, chieftainships, and monarchies of Eurasia into a largely integrated commercial and state system, the Mongol Empire enabled the short-term exchange of goods and ideas over much greater distances, which significantly affected the commerce, culture, technology, and political systems of societies in Afro-Eurasia and prepared the groundwork for European modernization in the long-term.

By offering protection to international traders, the Mongols significantly improved the scope and geographical extent of Eurasian trade routes, namely the land-based Silk Road, which facilitated commerce in bulk goods and the specialization of production. Mongol military campaigns in the thirteenth century moved skilled labourers around Afro-Eurasia, allowing a greater variety of goods to be produced. Marco Polo (1254–1324) describes how Egyptian craftsmen in the Mongol court introduced sugar refinement techniques in the Chinese city of Unguen, which soon developed its own sugar industry and became a significant sugar exporter. Although trade certainly existed in Song China before Mongol rule, the Mongols enacted more efficient practices to intensify the volume of trade. They introduced a standardized system of weights and measures, innovated with paper currency (which was easier for merchants to transport than heavy chests of metal coins), built relay stations, put together extensive maps, reduced taxes, subsidized merchant ventures, stationed garrisons to protect the roads, marked the roads with trees and stone pillars, and instituted a simple version of a passport – the "paiza", a tablet that granted access to relay stations and exempted its holder from customs. Together, these practices facilitated so much trade that Europeans grew accustomed to traveling deep into Asia. Marco Polo, a Venetian merchant, journeyed all over China and observed considerable levels of trade in silk, sugar, and pepper in Mongol-controlled China. Friar John, a missionary from Rome, travelled to India and possibly China and described the Mongol roads as "the shortest and safest". Admittedly, this connectivity had significant environmental consequences: ships and caravans carried bubonic plague from China into Europe and caused the Black Death, which wiped out a third of Europe's population. Yet, the plague, which appeared in India, China, North Africa, Iran, and Europe, can be seen as another indicator of how interconnected Afro-Eurasia had become during the *Pax Mongolica*. The Black Death, a short-term consequence of the Mongols increasing trade, also instigated long-term social change in parts of Europe by increasing the value of labour and forcing the nobility to compromise with an emerging middle class that would later begin the Renaissance. After the Mongols revamped and extended the Silk Road trade network, societies between Europe and Asia, once largely isolated from each other, grew accustomed to regular communication and commerce.

Linked together by the Mongols, this extensive Eurasian trade network distributed not only goods, but culture and technology as well. Marco Polo wrote that Kublai Khan observed holy rituals for Christians, Muslims, Jews, and other religions, showing that the Mongols tolerated a variety of religions. Because of this tolerance and the safe roads, missionaries could travel from one end of Eurasia to the other. Under protection of the Mongols, Christian missionaries like Friar John traveled as far as India and possibly China to convert Mongol rulers to Christianity. They were somewhat successful, as some Mongols did adopt Christianity and funded the construction of Christian churches in China. Some followed a combination of different religions: Genghis Khan's daughter in law was a Christian who observed certain Islamic practices, like giving alms, and funded the construction of an Islamic college. The long-term effect of this missionary work can still be seen today, as over 24 million Christians reside in India and over 44 million Christians in China. The Mongol Empire enabled major technological diffusion as well as cultural diffusion. Magnetic compasses, invented in China, began appearing in Europe around 1300, likely the result of trade between China, the Islamic world, and Europe. The compass enabled European ships to travel away from the coast, an ability which would become very significant in the Age of Exploration. Another result of this trade was an increasing use of paper, also a Chinese invention, instead of parchment in Europe during the thirteenth to fourteenth centuries. Perhaps the most important technology disseminated by the Mongol Empire was gunpowder. The Mongols made major military technological advances by collecting knowledge and devices from Europe, Persia, and China. Their tendency to adopt new technologies can be visibly seen in the Persian manuscript, *The Siege of Baghdad* (1258), in which the Mongols are depicted using siege engines, a technology that they as a nomadic people were once unfamiliar with. In the manuscript, the Mongols have also surrounded the city of Baghdad with a body of water by likely learning from Chinese engineers who knew how to redirect water with dams or canals. The Mongols also adopted gunpowder weaponry, namely firelances, cannons, and incendiaries, from the Chinese and introduced them to Europe with a military campaign in the early thirteenth century. The Europeans, initially unfamiliar with gunpowder, explained the weapons in supernatural terms. A Polish chronicle described the Mongols using witchcraft to spread a toxic smoke and Russian chroniclers reported that the Mongols attacked with dragons. However, as the Mongols consolidated their empire and made peaceful contact with Europe in the late thirteenth century, the Europeans began to understand

gunpowder as a chemical compound, not magic. By the 1260s, Roger Bacon recorded a formula for gunpowder in England, and European scientists would soon create the first guns in the fourteenth century, beginning the Gunpowder Revolution. By facilitating the exchange of culture and knowledge within Eurasia, the Mongol Empire spread Christainity from Europe to Asia and brought significant navigational, writing, and military technologies from China to Europe.

The formation of the Mongol Empire during the thirteenth century was the primary cause, but the breakup of the Mongol Empire during the fourteenth century was the secondary cause leading to the establishment of large, centralized state systems in Afro-Eurasia. Spheres of influence once dominated by the Mongols, such as Muscovy in Russia and Turkic tribes in Central Asia, grew separate from the Mongol Empire as it was weakening, but inherited well-organized Mongol political institutions, like a tax-collecting bureaucracy. The Novgorod Chronicles describe the Mongols organizing a written census of houses to collect taxes from Russia. After Muscovy overthrew the Golden Horde, one of the four main Mongol khanates in the fourteenth century, Muscovite Russia continued a regular census, even inheriting Turkic terms for tax-related words from the Golden Horde: *kostka* (a per capita toll tax), *tamozhnya* (customs), and *tamozhnik* (customs official). The census was a significant innovation, since it made taxation and conscription much more efficient and the rest of Europe would not conduct large-scale censuses until the 1800s. Muscovy maintained the *yam*, the series of relay posts for Mongol officials and authorized merchants, since it was a very fast means of communication and intelligence that connected the vast landmass of Russia to the political core in Muscovy. The Muscovite court also adopted the *poruka*, the practice of taking hostages from noble families, on a wide scale, which centralized power in the ruler instead of the nobility. *Poruka* was a Mongol practice that the Muscovite princes were intimately familiar with, considering that many of them spent their formative years as hostages for the Golden Horde. Turkic tribes likewise learned from their former Mongol overlords. The Ottomans developed a gunpowder-based military and a centralized, bureaucratically-administered monarchy that closely resembled the government of khanate. Ottoman sultans also adopted the Mongol title of "Khagan" (Great Khan). Lastly, European writers, who grew to respect the Mongols after about 1260, described the Mongol realm as immensely superior to any kingdom in Europe. The fourteenth-century English writer Geoffrey Chaucer writes about Chingis Khan: "there was nowhere in no region/So excellent a lord in all things." Friar Johnson likewise writes: "no king or prince in the world can be

compared to the Lord Kaan [Khan] in respect of the extent of his dominions, the multitude of his people, or the amount of his wealth". These writings, which set the Mongol Empire as an ideal standard, might have left later generations of Europeans with a desire to emulate the Mongols by creating a vast empire. The desire to imitate the Mongols can be seen in a fresco painted by Andrew of Florence in Santa Maria Novella in 1368, which depicts King Edward III of England and his retinue dressed in the Mongol fashion. In short, the effective political institutions of the Mongol Empire inspired the rise of bureaucratic monarchies, strong tax systems, and possibly European imperialism.

The Mongols were once nomadic peoples, yet their legacy left a fundamental impact on sedentary civilizations and their mission to unite the world laid the foundation for modern globalization. The Mongols spread culture and made key innovations in gunpowder technology that spread to European and Islamic societies. The Mongol Empire left a blueprint for an organized civil administration, army, and central government that post-Mongol states, mainly Russia and the Ottoman Empire, sought to emulate. Most importantly, the Mongols built large-scale international trade routes that connected Europe to eastern spices, silk, paper, compasses, and other goods. The Mongols' contribution to commerce may have impacted the world the greatest, since the Ottoman Empire's conquest of key chokepoints (Alexandria, Constantinople, most of the Black Sea coast) along those international trade routes eventually encouraged European monarchies to send explorers and merchants to alternate routes to Asia. These alternate routes took Europeans around the coast of Africa and west towards the Americas, leading the European powers to pick up where the Mongols left off in creating a global trade system and gunpowder empires.

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How Efficient are the CDR, MMSE, nWBV, and eTIV Values when Diagnosing a Patient with Dementia? by Sindhu Vemulapalli

Abstract

   Approximately 5.8 million Americans of all ages are currently living with dementia. To diagnose an individual with dementia, clinical doctors use several tests and complicated procedures, including estimated total intracranial volume (eTIV) values, mini-mental state examination (MMSE) scores, and the measurement of the brains' total volume. But how efficient are these methods and is there a simpler variable that can help doctors diagnose patients quickly and easily? In this paper, I evaluated the usefulness of 4 variables that clinical doctors use to diagnose a patient with dementia: the clinical dementia rate (CDR), MMSE, normalized whole brain volume (nWBV), and eTIV values. Using logistic regression models and confusion matrices that I programmed in Python, my results showed that the nWBV and eTIV scores were unreliable when predicting if a patient would have dementia or not. The MMSE scores were slightly more beneficial but still had a rather mediocre prediction accuracy. The CDR score, on the other hand, was accurately able to predict whether a patient was demented or not 100% of the time, proving its beneficence. These results show that the nWBV and eTIV values are inadequate when used as the sole predictors of a patient's status, as they constantly misdiagnose around half of the given test subjects. However, the CDR score should be put in high consideration when clinical doctors diagnose a patient with or without dementia.

Introduction:

   Dementia is a universal term that is characterized by impaired cognitive abilities. Although it is most prevalent in adults ages 65 and up, it is an abnormal part of the aging process and is generally caused by damage to brain cells, usually in the cerebral cortex. Clinical doctors use various methods before diagnosing a patient as demented or nondemented, most of which are increasingly time-consuming resulting in a 4-12 week diagnosis period. The rudimentary steps in which doctors diagnose patients is as follows: gathering information from the patient itself and another informant, administering tests that assess the cognitive functions of the patient, ordering standard medical tests (such as blood tests), and performing brain scans, such as the CT, MRI, or PET (How Is Alzheimer's Disease Diagnosed). My research aims to assess the functionality of several types of values that clinical doctors use to diagnose a patient with dementia in order to

confirm that doctors are using accurate and valuable variables to refine the amount of time that is spent when determining a patient's condition.

Methods

Dataset Analysis

The dataset that I used provided the subject ID, group, age, education, visit order, socioeconomic status, gender, dominant hand, MMSE, CDR, ASF, nWBV, and eTIV. The columns that were essential for my research were the group, MMSE, CDR, nWBV, and eTIV values. First, the group column was important because it displayed whether the patient was demented, nondemented, or converted (meaning that they started as nondemented, but were later diagnosed as demented during other visits.) Next, the CDR, or clinical dementia rating, is a scale between 0 and 3 (0 being nondemented and 3 being severely demented.) This value is found by testing six different cognitive and behavioral domains such as memory, orientation, judgment and problem-solving, community affairs, home and hobbies performance, and personal care. Two sets of questions are asked: one set to the patient and one set to an informer. A clinical doctor gathers the results and gives the patient an affiliated rating (Clinical Dementia Rating Orientation Score as an Excellent Predictor). The MMSE (or mini-mental state examination) is a test that has a series of 30 questions (making the maximum score 30.) This test assesses an individual's ability to recall and perform a multitude of everyday mental tasks (Mini‑Mental State Examination (MMSE) for the detection of Alzheimer's disease). Next, the nWBV, or normalized whole brain volume, measures the size of the complete brain by comparing warped images of many brains to a relatively common space. This method is most useful in comparing and contrasting several different patients, but can also be used for individuals to observe certain regions in a standard system (Brain Normalization). Finally, the eTIV (estimated total intracranial volume) is the estimated volume of the cranial cavity of the brain. This value can be beneficial since brain size declination is a characteristic of several neurodegenerative diseases, and the eTIV and nWBV scores directly deal with the measurement of the volume of the brain (A practical guideline for intracranial volume estimation in patients with Alzheimer's disease).

Statistical Methods:

To begin conducting my research, I analyzed a dataset that shows 15 values that several patients, both demented and non-demented, produced when tested for dementia. First, I imported

several packages, such as NumPy and Pandas, and cleaned the dataset by identifying and discarding any missing or repeated values. I also removed the patients who had converted from nondemented to demented, as it interfered with the results of my confusion matrix (explained later) and did not classify them as either demented or nondemented groups. Then, I began to evaluate the correlation between the CDR, MMSE, nWBV, eTIV, and Group values provided. However, this dataset consisted of patients who had repeated visits and different scores per visit. This would introduce statistical bias to the results of the model. Therefore, I further cleaned the dataset by using the 'groupby' function to find the mean of each patient's various scores. This would find the average of their CDR, MMSE, eTIV, and nWBV values from each of their visits.
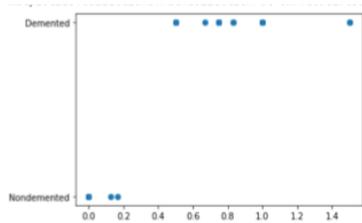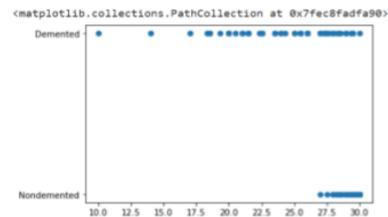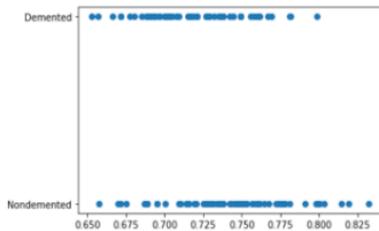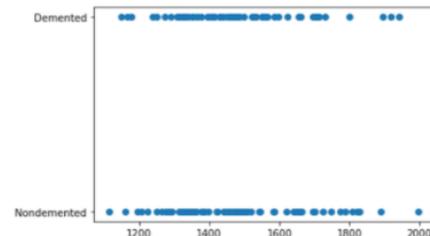

Figure 1. Correlations between each independent value and the Group. The figure depicts scatter plot models using (A) CDR, (B) MMSE, (C) nWBV, or (D) eTIV as the sole predictor variable.

Now that the data is cleaned, we can see that there is a clear correlation between the CDR and the Group values (Figure 1a) but the correlation between the MMSE and Group scores is very weak (Figure 1b). Similarly, there appears to be little to no correlation between the nWBV and the group, as well as the eTIV and group columns. To find the precise prediction accuracy between these 4 values and the group, I ran 4 logistic regression models that output the accuracy of the prediction rate. The first model analyzed the prediction accuracy that a logistic regression

model would have when computing the correlation between the CDR and Group columns. The results of this model proved to be 100% accurate, 100% of the time. Next, the second model showed the prediction accuracy between the MMSE and Group columns. The results of this model were at an average of 68% accuracy when run 10 times. The third model found the accuracy when predicting whether a patient was demented based on their nWBV scores. This model resulted in about 56% accuracy when run 10 times. Finally, the last model was able to compute the prediction accuracy between the eTIV score and the group category with an average of 55% accuracy (when run 10 times). In my final step, I created confusion matrices for each of these logistic regression models. The accuracy of each of their predictions is also displayed. These models display and confirm the results that I found by running the logistic regression models, proving that the CDR is the most useful of these values, while the others are less so.
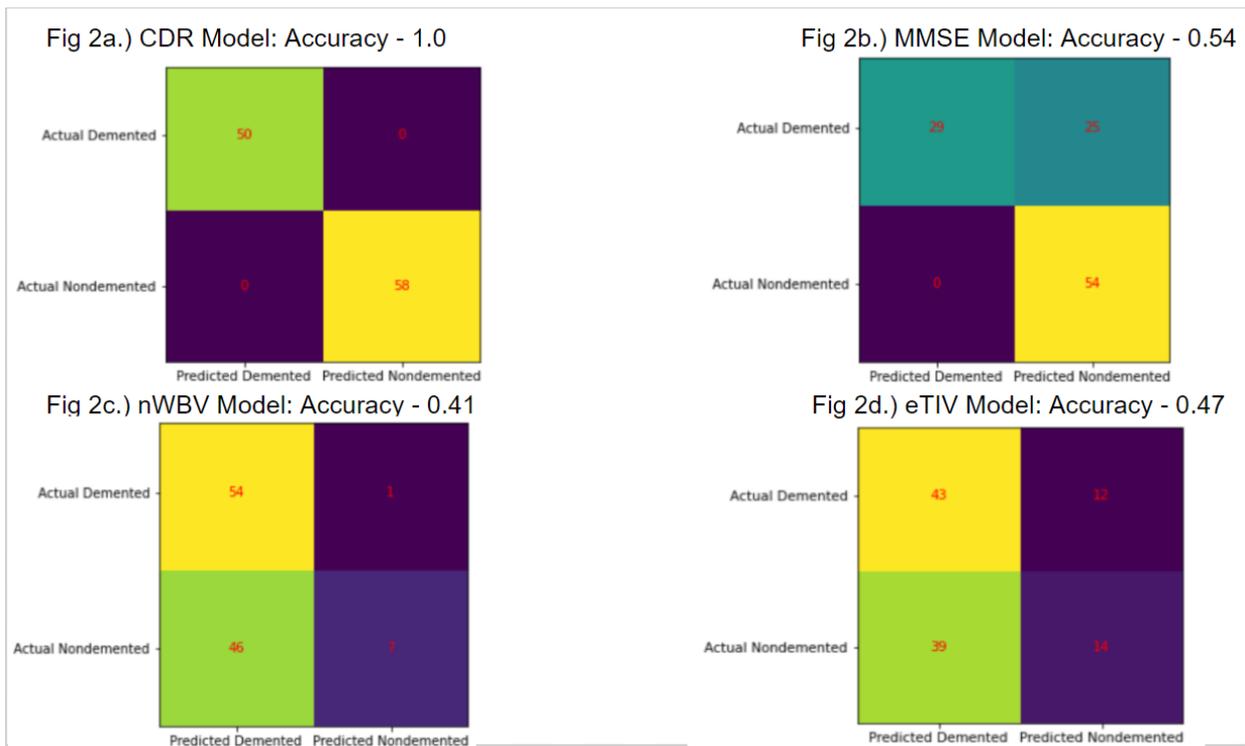

Figure 2. CDR is the most accurate predictor of dementia versus non-dementia. Logistic regression models using (A) CDR, (B) MMSE, (C) nWBV, or (D) eTIV as the single predictor variable distinguished dementia and non-dementia with 100%, 54%, 41% and 47% accuracy, respectively.

Results

These results show the value of the CDR and that the CDR can unquestionably be used to diagnose an individual single-handedly. Therefore, clinical doctors should consider making the CDR test easily accessible to more patients and give it high importance when they diagnose individuals with dementia since it is clear that this score can independently predict a patient's status accurately.

On the other hand, the nWBV and eTIV scores can be seen as both time-consuming and unsuccessful when determining if an individual is demented or nondemented which shows that they may not be the most efficient values that a clinical doctor can use. The MMSE score can still be somewhat helpful but overall is not a strong and practical method when determining if someone is demented. Clinical doctors can consider using this test as a preliminary method to develop a brief idea regarding the patient's condition.

Discussion and Conclusion:

Previous studies show that the CDR score can be highly predictive of a patients' condition, and additionally, CDR scores are considered to be easily acquired which is another added feature that this variable possesses (Clinical Dementia Rating Orientation Score as an Excellent Predictor). The MMSE value, on the other hand, is said to be less reliable and cannot solely predict whether a patient has dementia without other tests and examinations accompanying it (Mini‑Mental State Examination (MMSE) for the detection of Alzheimer's disease). These ideas support my results by proving the predictability of the CDR value and questioning the accuracy of using the MMSE value as the only variable when assessing a patient for dementia.

In conclusion, the CDR score is extremely valuable and can independently predict whether a patient is demented or not. The MMSE, eTIV, and nWBV are less reliable when solely used to diagnose an individual with dementia.

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Land and Ocean in Tobias Wolff's "Maiden Voyage" and "Leviathan" by Yuheng Wang

Abstract

Tobias Wolff explores the relationship between land and ocean in his stories. "Maiden Voyage" departs from the land and discovers the liquid modernity of the ocean, and "Leviathan" continues the voyage and encounters the whale. Unlike the classic scene of the confrontation between men and the whale in *Moby Dick*, Wolff depicts the possibility of cross-species communication. Together, these two stories break away from the centripetal gravity of anthropocentrism and explore an alternative way of coexistence between human and nonhuman species.

Introduction

Tobias Wolff is a prominent story writer in contemporary American literature. He has won the PEN/Malamud Award and the Rea Award for the excellence of his short stories. In 1983, *Granta* published a volume of short stories under the title of "Dirty Realism," including the works of Tobias Wolff, Raymond Carver, Richard Ford, and others. Later, Roland Barth categorizes these writers as "Post-Alcoholic Blue-Collar Minimalist Hyperrealism" (2). Since then, Wolff is often labeled as a minimalist writer. Despite the increasing current of comments on Wolff in recent years, few critics pay attention to the sea fiction in his writing. An investigation into this aspect not only breaches a maritime perspective on the studies of Wolff, but also deepens our understanding of American sea fiction. To be specific, "Maiden Voyage" discovers liquid modernity, and "Leviathan" turns the men-whale confrontation into a cross-species communication, which is a rewriting of Herman Melville's *Moby Dick*.

Liquid Modernity

"Maiden Voyage" starts an exploration into the sea. An old couple, Howard and Nora, participate in a cruise trip to celebrate their golden anniversary. The "open marriage" between Stella and Ron initiates Howard's doubt about his own marriage. James Hannah reads the story as a depiction of the "uneasy relationships between people" who have polarized understandings of love; for Stella, "love is carnality devoid of obligations," while for Nora, "duty outlasts love" (Hannah 27). What Hannah neglects is the maritime context and narrative perspective. The story

unfolds itself from the point of view of Howard, and underlines his awakening process during the ocean trip. This paper contends that the maiden voyage enables Howard to discover the liquid modernity of the sea and to reexamine the life on land to which he is accustomed.

The sea offers Howard a liquid framework to rethink terrestrial life. The sea, Haskell Springer comments, simultaneously assumes two roles in nautical literature. "It is the field of action on which the separation and transformation are played out, and it is the thing itself, the heart of mysterious knowledge to which the protagonists aspire and with which they return" (Springer 16). Before the voyage, seventy-five-year-old Howard is extremely proud of his golden marriage: "marrying Nora was the smartest thing I ever did" ("Maiden Voyage" 95). After the departure from the land, Howard undergoes a reversal in his attitude about his matrimonial life. The sea is not only the field in which Howard transforms his idea, but also the unexplored knowledge responsible for his life conversion.

Different from the ordered life on the land, the ocean is forever in motion, permeated with uncertainty and mystery. To go to sea, sailors must learn orientation skills in a vast maritime space without any visible landmarks. Before the invention of GPS, it was imperative for sailors to learn the method of determining the latitude by calculating the angle of heavenly bodies relative to the horizon, including "by the length of the day, or by the height of the sun or known guide stars above the horizon" (Sobel and Andrews 5). Wolff integrates voyage with life to explore the theme of maritime literature in the age of entertainment. When dancing with Stella, Howard learns that his zodiac sign is "Aries. The Ram" and he is a "very passionate" man ("Maiden Voyage" 91). Soon after the departure from the land, Howard confronts a question: the relationship between heavenly stars and his personality. "I don't know any rams. I guess I do all right." Howard has never considered the question before and had just taken it for granted. As if to echo his foggy mind, "a mist had fallen over the ship like a screen" (92). With the advance of the voyage, Howard begins to ponder over the question. "The mist was lifting. A few stars began to appear, blinking remotely. Howard wondered what Aries looked like" (93). Sailors learn from guide stars to navigate their ship in the night; likewise, Howard becomes interested in the relationship between the stars and the orientation of his life journey.

Armed with navigational skills gained from the observation of the stars, Howard begins to cast doubt on the right direction of his life. During the past fifty years of golden marriage, Howard was extremely proud of one thing: "marrying Nora was the smartest thing I ever did."

This sentence, repeated several times in the story, concretizes the right life direction of 75-year-old Howard. His maritime experience with Stella subverts his firm belief. Stella, within three days of the "open marriage," has extramarital sex with others. Hannah regards Stella as an incarnation of lust, devoid of morality. In fact, Hannah's accusation is groundless. The very condition of an "open marriage" is the mutual consensus on non-conjugal sexuality agreed by two parties. Stella accentuates the contractual permission in her marriage: "Me and Ron figure that's the best way of dealing with the problem" ("Maiden Voyage" 92). This paper contends that the protagonist's maritime discovery provides an alternative framework to examine terrestrial life. Marriage, in conjunction with family, is the cornerstone of society and has unconsciously shaped people's way of thinking. The liquid modernity of the ocean undermines the stability of land orders and turns everything into drifting. "The sea narrative questions not only its own foundations but also reaches beyond itself to question the foundations of a world" (Casarino 12). The questioning spirit of the ocean presents a vantage point for us to rethink our accustomed terrestrial thoughts.

Howard's role in the masquerade further reinforces the point. "Howard went to the costume party as a buccaneer. A sort of gentleman pirate" ("Maiden Voyage" 96). The novelist underscores his maritime costume. "Nora had made him an eyepatch and Tweed lent him the captain's ceremonial sword" (96). One prominent feature of a pirate is his "resolute willingness to go to the limits and beyond" (Cohen 112). The pirate manifesto of "The Temporary Autonomous Zone, Ontological Anarchy, Poetic Terrorism" exemplifies the resistance of terrestrial orders and the de-territorialization of the land (Cohen 118). The eyepatch of the pirate is less about a missing eye than the flexible switch between two different perspectives. A pirate constantly switches between "above-deck daylight" and "below-deck darkness" and one-eye patch grants him an instant adjustment of night vision in the dim interior of the ship so that he could quickly prepare himself for any possible raids (McCarthy). Therefore, the eyepatch offers him two different perspectives with which to examine the world.

Likewise, Howard also learns two different perspectives to reconsider "the smartest thing I ever did." The host invited the old couple to share their secret of golden marriage, and the spotlight focused on them. Howard felt reluctant and even repulsive to speak in public. "Howard covered his unpatched eye as it filled with hot silver light" ("Maiden Voyage" 97). However, Nora enjoyed this kind of public demonstration of love show. Nora tugged at his arm and forced

him to stand up. "Howard groped behind him for his chair but Nora clamped down even harder on his arm." The elaborately depicted scene encapsulates the essence of their matrimonial life: beneath the facade of the harmonious marriage is Howard's injured toleration of Nora's unbearable tyranny. Again, "Howard shrank back but Nora pulled him along…by her forcefulness" to the microphone. Howard wanted to retreat, but Nora compelled him to perform the melodrama of a beloved couple. This time, Howard comes to his painful awakening. Through the voyage, Howard has gained an ocean perspective to reexamine his accustomed terrestrial life, and cast heavy suspicion on "the smartest thing" he had done during the past 75 years. Before the public, Howard "stared at it [microphone] as if it were something he was being asked to eat." As for golden marriage, "nothing to it," he continued, "You just go from day to day and before you know it fifty years are up" (97). The proudest thing in his life, golden marriage, now becomes an insipid rolling of humdrum days. "He tried to think of something else to say but he couldn't. That was all there was" (97). The snowballing silence is swallowing everything. The golden marriage is completely negated. When "The Anniversary Waltz" was being played, Howard tried to dance with Nora, but "the boat plunged into a swell and the deck pitched." It is time to confront the truth. "Howard thought they should probably be talking to each other" (98). At the end of the story, the novelist deliberately underscores the different perspectives of the (un)patched eye. When Nora moved close to Howard, "his unpatched eye ached" (98). "Maiden Voyage" is not only the beginning of *Friedman* the ship, but also the initiation of Howard's life.

Interspecies Communication

"Maiden Voyage" departs from the land, ventures into the water, and discovers the liquid modernity of the ocean. "Leviathan" continues the journey, encounters the whale, and complicates the relationship between the land and sea. In the story, Ted the husband invites Mitch and Bliss to celebrate the thirtieth birthday of his wife Helen; they indulge themselves in drugs and confess their most heart-felt experience in their life.

The land is presented as a spiritual wasteland. Mitch and Bliss sell drugs to their friends Ted and Helen, who rely on narcotic stimuli to feel the meaning of life. "Helen knew that someday she wasn't going to be able to stop herself from giving Mitch the business" ("Leviathan" 294-295). Their bodies become addicted to drugs, and their minds are bogged into moral swampland. "Bliss's little girl came down with tonsillitis last month" and was hospitalized to

receive an operation. The child, tortured by physical agony, longs for maternal caress and comfort. Bliss, as the mother, never paid any visit to her own blood-and-flesh during the whole month. The only reason, Bliss informs the readers, is her dislike of hospital atmosphere. Despite her ingrained indifference and selfishness, Bliss still assumes herself as a warm-hearted mother because "I think of her [the kid] all alone in there" ("Leviathan" 296). Through constant self-deceptions, Bliss convinces herself that children do not need parents' help because adults have "built up this big myth about kids being helpless and vulnerable" who are actually "tough little monkeys" (296). Lies provide Bliss with psychological excuses to evade her responsibilities and to become a Saint Mary. Bliss miniaturizes the adult world of human beings as egoistic and hypocritical.

Mitch's experience further reinforces the image of a spiritual wasteland. Mitch and Raphael are friends. Mitch "used to paralegal with this guy in the city" ("Leviathan" 298). Raphael was thrown out of his apartment and "was living in this ratbag on Post Street" because of his extramarital affairs. Out of sympathy, Mitch invited Raphael to temporarily stay in his house. This turned out to be the beginning of a nightmare. Raphael wrecked Mitch's car, stole his belongings, and had sex with his wife. Paralegals are supposed to keep law and order to safeguard families and society. However, Raphael as a paralegal indulges in rampant desire, betrays his friend, and subverts other families. Also as a paralegal, Mitch should do poetic justice to help the weak and confront the bully. But he chooses to keep silent toward the evil deeds. Ironically, he even expected praise for his lack of courage (298). The law remains silent in front of evil; cowardly behaviors become "sweet" virtue. Now, Mitch sells drugs to others; this complete transgression of legal boundaries renders him a condemned criminal. The world of the land is diffuse with hypocritical morality and distorted law. But, there is more. Ted, "the king of horrendous," is going to reveal his "absolute bottom-line confession. The Worst Story Ever Told." Helen stops him, and suggests that they tell "the thing you're most proud of" (299). Helen insists on telling her story of helping a retarded boy (Tom) to see whales in the sea. The ocean seems to bring a slim chance of hope to the corrupted world of the land. However, the readers soon discover that the altruism of Helen, Sister Morphine, is just a disguise to satisfy her fantasy of being "a saint" (300).

The erosion of the land has also contaminated the sea. Anthropocentric activities, such as the excessive exploitation of the land, the large scale of deforestation, the escalating greenhouse

effect, have gradually rendered our earth into a physical wasteland. As the counterpart of the wasteland, the sea also becomes an enormous dumping ground to store endless human trash. Among the trash, indissoluble plastic materials, leaked oil, and military wastes are the most detrimental elements in the sea. "The militarization of the sea has made it into a basin for waste. Hundreds of thousands of barrels of radioactive materials have been dumped in the ocean" (DeLoughrey 707). Ironically, these radioactive materials are assimilated by fish, which in turn are consumed by human beings; therefore, after a full circle, these radioactive materials come back into human bodies. In the polluted waters of the ocean, "weird plants and animals morph out of nameless organic byproducts" and produce eerie oceanic scenes (Yaeger 534).

The polluted ocean finds its fullest expression in the eerie whale in "Leviathan." The hideous monster reeks of offensive odor. "This unbelievably rancid smell all around him. Covered with barnacles and shells and long strings of seaweed trailing off him. Big. Maybe half again as long as the boat we were in" ("Leviathan" 301). Human beings not only turn the land into a wasteland but also render the sea into a gigantic dumping ground. They take the deterioration of the earth for granted, and continue their addiction to drugs for ephemeral sensation. However, the whale in the story could no longer tolerate the suffocating habitat, and vehemently protested against the self-destructive process of human beings. He started to strike the boat and attempted to awaken the numbed human beings. "He started making passes at the boat, and every time he did it we'd pitch and roll and take on about five hundred gallons of water. We were falling over each other" (301). For the people living in the age of entertainment, they regard the whale's life-risking warning as games. "He was probably playing with you." "At first everyone laughed and whooped it up, but after a while it started to get heavy." Gradually, these passengers come to realize that the self-tormenting whale is not playing games with them, and instead, "it sounds like he was bent out of shape about something" (302).

The furious whale's constant striking against the boat endangers the tourists, and at this moment, retarded Tom loses his control and becomes outrageous. "Oh, no, what if he goes berserk! He was so much bigger than me I wouldn't have been able to control him. Neither would anyone else" ("Leviathan" 302). For Helen, the whale's assaults provoke Tom's exasperation, and together, they would result in the final disaster. However, this paper proposes a different interpretation. The whale is confronting the tourists in the boat, expressing his protest against human pollution of the ocean; Tom is communicating with the whale, and turns the

confrontation into a conversation. As a victim of ocean pollution, the whale has a hideous appearance. "There were so many shells and barnacles on him that you could hardly see his skin. It looked as if he had armour on" (302). Richard Eder is insightful in pointing out the worsening conditions of modern people. "In the depleted atmosphere, every scream is silent. Each of Wolff's stories is an amplifier picking up the sound that cannot get through" (Eder 3). The whale is one of "the sound[s] that cannot get through" the ears of human beings. Like an anguished patient with a stank odor, the whale is demonstrating his wound to human beings to arouse their attention. "He scraped the boat a couple of times and it made the most terrible sound, like people moaning under water" ("Leviathan" 302).147

The whale is depicted as a "moaning" patient, and on the other hand, Tom, a human being, is rendered into an agonizing diseased animal. Tom suffers from Down's syndrome. He is big and strong, but only has the moderate intellectual ability of a child. The sick whale sounds "like people moaning under water," and Tom makes the feline noises. Tom "started to make these little noises," Helen continued her story, "I have never heard him do that before. Little mewing noises" ("Leviathan" 302). The whale is becoming more and more vehement in its activities; as if to reverberate with the ocean creature, Tom is also responding with more and more agitated reactions. Together, they are voicing their disapproval against anthropocentric contamination. When Tom "calmed down," the miracle occurred: the whale also stopped its attack, and went back into the ocean (303). Why does Tom become the only one who is capable of communicating with the whale? The reasons will be explained in detail later in the article.

It is very significant for Helen to narrate the story in the traditional form of "telling yarns." In marine literature, the narrator, who is usually the one of the survivors, retells his seafaring adventures face-to-face to the listeners. This oral tradition in ocean-going literature is called "telling yarns." For example, Ishmael in chapter 54 of *Moby-Dick* directly tells his friends about his whaling experience in the *Town-Ho*. In the fictional world of Joseph Conrad, the narrator Marlow "followed the sea" and had a "propensity to spin yarns" (Conrad 67-8). When "the sun set; the dusk fell on the stream, and lights began to appear along the shore," Marlow was narrating his voyage to the audience, sharing his life-risk lessons with them, and in return, he gained respect from them. The narrator and listeners are linked together by "the bond of the sea." Wolff dovetails the format of yarns with the spirit of consumerism to explore the development of marine literature in the new era. Helen drew the curtains shut, fetched the candle, and prepared

the appropriate atmosphere for the yarn. "For a few moments they silently watched the flame [of the candle]," and Helen began to spin her yarn. "One of my mother's friends had a boy with Down's syndrome" whose name was Tom. Tom was "crazy about animals," especially whales. Therefore, Helen decided to take Tom to go whale-watching in a voyage ("Leviathan" 297). When her yarn arrived at the climax, the whale was constantly assaulting the boat, and Tom was getting agitated. At that moment, "the candle hissed and flared. The flame was burning in a pool of wax. Helen watched it flare up twice more, and then it died. The room went grey" (303).

The content of the story and the context of the narration are perfectly fused into each other, and the only perceivable thing in the darkness is the narrative voice. Helen began her most glorious moment: "I just calmed him down."[1] In maritime literature, when the narrator finishes his yarn, the listeners usually fall in silence, and contemplate over the edifying lesson in the story. As in Conrad's fiction, "Marlow ceased, and sat apart, indistinct and silent, in the pose of a meditating Buddha. Nobody moved for a time" (Conrad157). The audience's meditative and engaged responses further enhance the narrative authority of the narrator, and sublimate the oceanic epiphany of the story. In sharp contrast, when Helen ended her whale story, Ted – one of the three listeners – fell asleep. Helen's narrative authority was completely subverted. Disappointed and despairing, Helen "raised her hand, and slapped [him] across the face" ("Leviathan" 304). Ted was not awakened to the epiphany; "he groaned softly and turned over" and continued his sleeping. The possibility of communication is smashed into pieces, and she resorts to drugs for comfort. "Helen bent down to sift the gleaming crystal." Frustrations, alienations, drugs, pollution, diseases are encroaching the land. Where can we find hope?

The title of the story, "Leviathan," is pregnant with symbolic meanings. On her 30th birthday, Helen narrates her encounter with the Leviathan. People get addicted to drugs, become unscrupulous to each other, and turn the land into a wasteland; the rampancy of pollution also renders the ocean into a common dumping ground. All these topics funnel into the central theme of the story: birthday. The leviathan in the Bible foreshadows the end of the world. Originally, God created a male and female leviathan. But their propagation and multiplication would lead to the destruction of the world, and God had to slay the female leviathan and preserve its flesh for the future banquet "that will be given to the righteous on the advent of the Messiah." Therefore, Leviathan unifies the opposite ends of destruction and rebirth (*New World Encyclopedia*). That is precisely the background of Wolff's story. Helen's birthday party, imbued with drugs and

corruption, miniatures the barren world of the wasteland, but it also implies the possibility of rebirth. The communication between Tom and the whale orients the direction of future regeneration. From the anthropocentric point of view, Tom, afflicted with Down's syndrome, is incapable of normal communications with other social members. However, from the perspective of Posthumanism, the disease impedes Tom from his socialization with human beings, but it also protects him from the miasma of anthropocentric contamination. Thus Tom preserves his childlike curiosity and maintains his primitive innocence to communicate with animals. In *What Is Posthumanism?* Cary Wolfe points out, Temple Grandin suffers a similar condition (autism), but the disease "has given her a special understanding of how nonhuman animals experience the world" (Wolfe 128). Likewise, Tom, in this story, is "crazy about animals, so we would usually go to the zoo or I would take him to this stable out in Marin that had free riding lessons for special kids" ("Leviathan" 300). As for those inaccessible sea animals, "Tom had whale posters all over his bedroom but he'd never seen a real one" (301). It is high time for us to give up anthropocentrism, to reconsider the appropriate position of human beings in nature, to cultivate a new interspecies relationship among men, animals, and their habitat.

Conclusion

"Leviathan" forms an intertextual relationship with *Moby-Dick*. Herman Melville endows the interspecies confrontation between Captain Ahab and Moby-Dick with philosophical penetration into mysterious nature. In *Moby-Dick*, the sailors under the command of Captain Ahab are battling against the titular whale and result in the final destruction of both sides. Wolff continues the classic confrontation between man and fish, but rewrites it in a subversive way. The leviathan constantly assaults the boat. The traditional image of a wise and resourceful captain who leads the crew to fight against the sea monster, now becomes a tour guide who "was greatly terrified." The brave sailors are metamorphosed into the "scared" tourist passengers who "went white as a sheet" like the guide ("Leviathan" 302). The solution for Wolff, different from Melville's mutual destruction, is the posthumanist communication between human beings and the whale. Posthumanism endeavors to undermine anthropocentrism and advocates a coexistence of human beings and other species. In short, Howard in "Maiden Voyage" discovers the liquid modernity of the ocean and longs to escape from the centripetal gravity of terrestrial orders.

Then, retarded Tom in "Leviathan," no longer impeded by anthropocentric gravity, is capable of interspecies communications with the whale.

Note:

1.   Helen claims the credit of tranquilizing furious Tom so that she can assume the responsibility for saving the passengers in the boat. This paper argues that it is more about Helen's erroneous assumption to boost her sense of self-importance than an accurate account. In fact, it is the communication between Tom and the whale that is responsible for the final security.

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Indira Gandhi: The People's Prime Minister by Fiona Reenan

Upon Indira Gandhi's birth in November 1917, her father, Jawaharlal Nehru, received a letter from Sarojini Naidu, one of the most prominent female activists in India at the time.[32] In that letter Ms. Naidu said, referring to Indira, that "this child would be the new soul of India."[33] These words foreshadowed the complex, illustrious, and revolutionary life that Indira Gandhi would go on to lead as India's first female prime minister. Indira was a monumentally powerful leader, who wholly transformed the political power dynamic in India. She almost single-handedly wrested control from the powerful Syndicate, a group of political leaders, and placed it back into the hands of the people. Through her populist policies, familial background, and disenchantment with the upper echelon of Indian politics, Indira Gandhi was able to readjust the balance of power in Indian politics in order to make it a more prosperous and democratic state.

Indira Gandhi's familial background provided her with an unusual level of political access and experience, both of which would help her eventually consolidate power as Prime Minister. Studies on female political leaders have shown that their background is crucial in determining their ability to succeed in the world of politics and government. Aspects such as family connections, early exposure to politics, and education play a much more significant role in the rise of female politicians than they do in male politicians.[34] This narrative would hold true in Indira's experience. Growing up as the daughter of the renowned Jawaharlal Nehru, Indira Priyasdarshini Nehru found herself immersed in Indian politics from the day she was born.[35] Her father was, at the time of her birth, a celebrated political activist and public figure, and later on would be elected as the first prime minister of free India on August 15th, 1947.[36] Even the ways in which young Indira entertained herself were political at heart. As a child, she used to gather the household servants and recited speeches to them from the dining room table using fragments of the sentences she had overheard from her parents and their visitors.[37] When Congress Party elders told her she was too young to join the organization, Indira rebelled and formed her own

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[32] Indira Gandhi, *My Truth* (New Delhi, India: Vision Books, 1981), 63.

[33] Gandhi, *My Truth*, 11.

[34] Sourabh Singh, "Unraveling the enigma of Indira Gandhi's rise in Indian politics: a woman leader's quest for political legitimacy," *Theory and Society* 41, no. 5 (September 2012): 480.

[35] Pranay Gupte, *Mother India: a political biography of Indira Gandhi* (New York: Scribners, 1992), 17.

[36] Zareer Masani, *Indira Gandhi: A Biography* (New York: Thomas Y. Crowell Company, 1975), 77.

[37] Gupte, *Mother India*, 150.

band of children which she named, "Vanar Sena," or the "Monkey Brigade." She rallied thousands of young children into her battalion and motivated, trained, and drilled them as an army general would. The monkey brigade served as a helping force to the Congress Party as they sought to wrest control from the British, and performed tasks such as posting notices about meetings, making flags, and addressing envelopes.[38] As evidenced from the study mentioned above, early exposure to the complex and oftentimes exclusive political sphere offered numerous benefits to Indira. It gave her popular legitimacy, especially after the election of her father as Prime Minister, an invaluable number of political acquaintances, and a unique exposure to politics at a very young age.

However, these calculated benefits came at a greater emotional cost. Indira's father, Jawaharlal Nehru, was not a warm and nurturing parent. Throughout his political ascent, he remained cold and distant towards Indira and her mother, Kamala Nehru. The familial tension had a damaging impact on Indira, and contributed her to dropping out of Oxford University which only furthered her feelings of insecurity and discontent.[39] As Indira grew up, Jawaharlal Nehru constantly reminded her that she had, "a certain public position which you may have done nothing to deserve," and pushed her to be independent and worthy of her renowned family.[40] Sentiments like this had an enormous impact on Indira and reinforced the idea that she had to prove herself to others, which ultimately manifested itself in her desire to garner popular support as Prime Minister, once elected. Indira Gandhi's backstory was in many ways a dichotomous one. Her family gave to her the most vital support and connections, yet it also fostered insecurities and emotional difficulties. As a precocious child of political leaders, Indira received a nuanced and thorough introduction to politics before most people had mastered arithmetic, yet she never felt completely comfortable at high-level educational institutions like Oxford. This unorthodox upbringing gave Indira Gandhi the access and preparation to rise to power after the death of her father's successor, and also created more nuanced influences on the way she governed as prime minister.

On January 19th, 1966, after four hours of voting, the Chief Whip of the Congress Party stepped out of the parliament and announced to the waiting crowd, "It's a girl!" Indira Gandhi had been elected as India's first female Prime Minister by the 526 members of India's Congress

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[38] Gupte, *Mother India*, 163.
[39] French, *India*, 36.
[40] French, *India,* 35.

by a count of 355-169 votes and two invalid ballots.[41] This historic event followed the death of Indira's father on May 28th, 1964 and the subsequent death of his successor.[42] Indira Gandhi's election as Prime Minister demonstrated significant issues with India's political hierarchy, ones that she would seek to correct during her time in power. Sudipta Kaviraj, a professor at Columbia University, described Indira's election in 1996 as "...modern Indian history's most crucial and indelible accident; for once this accident took place, other political necessities were restructured according to the logic of this single fact."[43] This, rather dramatic description, accurately describes Indira's unusual path to power. After the death of the previous prime minister, the Congress Party leaders, known colloquially as the Syndicate, thought Indira would be a malleable figurehead to offer up as prime minister, and supported her bid with the idea that they would really be in charge behind the scenes, a dynamic which demonstrated how corrupt some aspects of the Indian political system had become.[44] From an appearance perspective, Indira seemed to be the perfect nominal leader for the Congress Party. She had an extremely popular household name, came from upper-class Brahmin ancestry, and had already met most significant world leaders and politicians during her time working for her father.[45] However, Indira did not turn out to be the symbolic figurehead the Syndicate thought they had elected. Instead, she became a populist prime minister, who ended up valuing her connection to the people infinitely more than her political connections.

The Syndicate was a group of political leaders that were popular amongst politicians and Parliament, not the people, a distinction which Indira Gandhi took advantage of during the beginning of her time as Prime Minister.[46] Indira was not enchanted with Parliament, the favored mechanism the Congress Party Syndicate used to enact their will. She was not a particularly convincing or inspiring parliamentary speaker, in fact many of the members of the Syndicate and Parliament called her "goongi guidya," which translates to "dumb doll."[47] This tension between Indira and Parliamentary leaders caused her to shift her interests towards the people, and so she began giving her speeches directly to them, rather than appearing in Parliament. Indira enjoyed

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[41] Gupte, *Mother India,* 279.
[42] Masani, *Indira Gandhi*, 126.
[43] Sudipta Kaviraj, "Indira Gandhi and Indian Politics," *Economic and Political Weekly* 21, no. 38/39 (September 20, 1986): 1697.
[44] French, *India*, 40.
[45] Gupte, *Mother India*, 280.
[46] Singh, "Unravelling the enigma", 481.
[47] French, *India*, 41.

her unfettered interactions with the populace, and readily accepted petitions wherever she went.[48] The people adored Indira as well, her role as a public figure under her well-respected father gave her legitimacy and familiarity, two qualities that many members of Parliament did not possess in the eyes of the public, as most were chosen by the political leaders and not the people.[49] Indira Gandhi's frustration with the Syndicate during her early years as Prime Minister encouraged her to seek direct connection with the people, and ultimately transcend the existing political power structure. Fundamentally, the Syndicate sought to restrict Indira and her power, and aimed to use her only as a frontman for the Congress Party, and not as an influential decision-maker. Indira combatted their efforts by making a direct appeal to the people, through both her public appearances and also her policy initiatives.

In an article in Foreign Affairs, Indira Gandhi wrote, "It is a sense of "Indianness" which unites our people despite ethnic, linguistic, and religious diversity. Most conflicts and tensions in the world originate in the failure to take note of the importance of nationalism."[50] This quote demonstrates Indira's recognition of Indian nationalist sentiment, and her willingness to listen to the people's petitions and issues. Both of these qualities motivated her to focus her attention on issues that affected every Indian, not just the causes relevant to certain castes or religious sects. One problem that deeply affected all of India's people was devastating agricultural shortages and nation-wide famines. As a growing country, India was struggling to feed herself, and so Indira Gandhi made her primary economic goal increasing agricultural production.[51] Indira continued and expanded upon agricultural programs begun by her predecessor to lead what would become known as the "Green Revolution." The revolution involved, among other things, the development of higher-yield crops which increased the harvest and wealth of India's many farmers.[52] This "Green Revolution," transformed India from a country crippled by chronic famine into one of the most agriculturally-productive countries in the world.[53] Although Indira embraced modern agricultural technologies in order to facilitate this widespread change, she took care to emphasize the preservation of traditional Indian values and culture, a characteristic her people greatly appreciated.[54] Additionally, agricultural policy played a significant role in Indira

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[48] French, *India*, 41.
[49] Singh, "Unravelling the enigma", 481,483.
[50] Indira Gandhi, "India and the World," *Foreign Affairs* 51, no. 1 (October 1972): 66.
[51] Kaviraj, "Indira Gandhi," 1699.
[52] French, *India*, 40-41.
[53] French, *India*, 40-41.
[54] Gandhi, "India", 66.

Gandhi's first visit to the United States, another notable turning point in her power struggle against the Syndicate. In 1966, Indira embarked on her first state visit to the United States president, Lyndon B Johnson. The two quickly became close allies, which earned Indira praise from American news outlets, but more importantly allowed her to secure the 3.5 million tons of grain and 900 million dollars in project aid which India desperately needed.[55] The phenomenally successful trip gave Indira international praise and credibility as a leader, and significantly strengthened her control over the Syndicate. By the end of Indira's time in power, India was an agricultural powerhouse, yet still retained its cherished morals and values. Indira's success led the people of India to realize how ineffective and corrupt the Syndicate power structure was, and this recognition encouraged a shift in support from the party-chosen candidates to individual actors, with their own ideals and beliefs. As explained by Sudipta Kaviraj, "...Congress had started becoming gradually depoliticised."[56] Indira earned the trust and love of the people of India through her practical and unbiased policies, such as agriculture reform, and this support enabled her to ultimately transcend the Syndicate in terms of political influence.

By the 1970s, only a couple years after her election in 1966, Indira Gandhi was a cultural and political icon and the once-almighty Syndicate had become almost wholly irrelevant. The era of political populism in India had begun.[57] The Syndicate's top-down power structure had been replaced with a new wave of political influence, one which drew its power from the people of India, and their champion, Indira. Politicians were no longer being chosen by other politicians, they were being chosen by the people, as Indira hoped they would be. In her own words,

What holds people together is not religion, not race, not language, not even a commitment to an economic system. It is a shared experience and involvement in the conscious and continuous effort at resolving internal differences through political means.[58]

Indira was committed to providing her people with the ability to participate in that effort, and used the experience and opportunities offered to her by her background and family to do so. Through firsthand experience she was able to recognize the corruption of the Syndicate system, and made it her goal to reduce their influence. Throughout her time in office, Indira Gandhi found a role as the people's prime minister, both by connecting with them personally and dealing

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[55] Gupte, *Mother India*, 290-291.
[56] Kaviraj, "Indira Gandhi", 1699.
[57] Singh, "Unravelling the enigma", 481.
[58] Gandhi, "India", 65.

with their issues swiftly, and that role allowed her to establish a new, more populist political organization system that would ultimately serve all of India's people.

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French, Patrick. *India: A Portrait*. New York: Alfred A. Knopf, 2011.

        This source was helpful because it includes a chapter on Indira Gandhi and her family's political ascension entitled "There Will Be Blood." The author, Patrick French is a British historian and author who has written multiple works on Southeast Asia, in this book he provides a cultural, political, and economic overview of India and its history, in an attempt to examine how complex the nation and its development have been. The chapter I focused on emphasized Indira Gandhi's rise to power and how it related to her father's status in India, which is a large part of my argument for how she rose to power despite conflict amongst political leaders. I used this chapter to give me a broad overview of her story so that I could identify areas in which I wanted to explore deeper in her biographies and her personal works.

Gandhi, Indira. "India and the World." *Foreign Affairs* 51, no. 1 (October 1972): 65-77.
    https://www.jstor.org/stable/20037963.

        This primary source was extraordinarily helpful to me, as it was written by Indira Gandhi herself. It is an article published in an international journal on India, later on in her life, and more specifically its foreign relations. Despite a focus on international affairs, the source gave me a lot of insight into what Indira viewed as India's most necessary goals and practices. Additionally, the source enabled me to find some quotes that demonstrated those ideas which Indira held. Although the source may be biased towards empowering India and promoting Indian sentiments in the geopolitical spectrum, it still is valuable commentary that accurately reflected Indira's views.

———. *My Truth*. New Delhi, India: Vision Books, 1981.

        I found this primary source to be very insightful as it was Indira Gandhi's own memoir. The book provided me with an invaluable perspective into Indira's life and her voice as a person and a leader. It also provided me with the quote I used in my introduction, which I tried to use to set the tone of the whole paper. I more specifically used the early chapters on her childhood and early political career, as that was what was most relevant to the focus of my paper. Few sources can be more personal and accurate

than autobiographies, so I found a lot of value in hearing Indira's life from her own words.

Gupte, Pranay. *Mother India: a political biography of Indira Gandhi*. New York: Scribners, 1992.

        This source offers an in-depth biography of Indira Gandhi and provided helpful background that I could use to further my understanding of Indira's life and also to enhance the context given in my paper. I more specifically used the chapters on her early life as a young woman and her first election. Pranay Gupte is a best-selling biographer and former foreign correspondent for the New York Times. He sought to create a story-like depiction of Indira's life, while still including relevant and necessary political commentary. This source proved to be useful in aiding my understanding of Indira's personal background, especially her relationship with her father, and how that ending up affecting her while she served as prime minister.

Kaviraj, Sudipta. "Indira Gandhi and Indian Politics." *Economic and Political Weekly* 21, no. 38/39 (September 20, 1986): 1697-708. https://www.jstor.org/stable/4376158.

        This source provided a thorough examination of Indira Gandhi's political influence and legacy, and aimed to analyze the factors that allowed her to rise to power and her actions once she was in office, rather than to just chronologically retell her story. The article was written by Sudipta Kaviraj, who is an internationally respected scholar and professor of Southeastern Asian History who is currently teaching at Columbia University. His emphasis on India's social and political history meant that his piece was meant to show how Indira Gandhi's time as prime minister and her rise to power has affected India in the decades after her time in power. I focused on the first and second quarter of his journal which specifically discussed her early political life and therefore was most relevant to my topic about her rise to power.

Masani, Zareer. *Indira Gandhi: A Biography*. New York: Thomas Y. Crowell Company, 1975.

        I used this biography as a resource to compare with my other biographies, in order to ensure that the information I incorporated into my paper was not just one biographer's

opinion. Zareer Masani received his Doctorate from Oxford University in Modern History, and published his thesis on Indian nationalism, a subject that is closely intertwined with my study of Indira Gandhi. I specifically used the early chapters of his biography, as most of the information in my paper was centered around Indira's early life and early political career.

Singh, Sourabh. "Unraveling the enigma of Indira Gandhi's rise in Indian politics: a woman leader's quest for political legitimacy." *Theory and Society* 41, no. 5 (September 2012): 479-504. https://www.jstor.org/stable/23263480.

This source provided lots of information on the relationship between Indira and the Syndicate, which was especially helpful when I was outlining my paper and learning about the political structure of India before and after Indira's time in power. Sourabh Singh is a professor of Sociology at Florida State University, who received both his MA and BS degrees at universities in India. He provided a concise overview of India's political and social structure and more specifically how it related to Indira Gandhi's prime ministership.

Fixing Groupthink Among Young People: A High Schooler's Perspective by Sam Litwinski

I'm a student at Walter Payton College Prep in Chicago, a magnet high school ranked among the best in the United States. As a school with a strong intellectual focus, one of our core values is "curiosity" in the pursuit of knowledge. Inside the classroom, we try to live this out by engaging in vigorous discussions in search of the truth.

Online, however, high school students fall into the same groupthink that is all too common on social media. Part of this is due to high school social dynamics: as teenagers, we want to fit in, or at least not be ostracized by our classmates. High school is remarkably conducive to groupthink, because virtually every teenager would rather fly below the radar than risk fraying friendships over ideological disagreements.

But another, even bigger part of the problem is the one-sided way that opinions are transmitted through social media. Teenagers follow content creators whose posts validate their views. Students then share these posts with their own social media followers, who repost that content to their own stories, and the cycle continues. Nowhere along the way are students confronted with ideas that challenge their own.

Around a year ago, in the wake of global protests against police brutality, it seemed like almost every story on my Instagram feed was from students in support of defunding the police. Many made the case that police were not needed in our society at all. Others argued that policing's purpose was to uphold systemic inequalities rather than prevent crime. It was rare to see anyone my age publicly pushing back against these narratives, even though there were obvious questions about how a society would function without police. Judging by their stories, it appeared that almost everyone my age agreed that reducing or abolishing the police would make the country safer and more just.

The police were defunded in some places, but the results seem to prove why we need more debate and less groupthink. [In Los Angeles](#), the police department budget was cut by $150 million in July 2020, yet amidst a large increase in violent crime, the budget is now [being increased](#) by an even larger amount. Similar stories have played out in San Francisco and other cities. While the causes behind these increases in crime are varied, it is clear now that defunding the police did not create a more peaceful world; arguably, it helped create other significant problems.

Defund the police is not the only example of social media groupthink. A similar cycle of content creators sharing stories and posts within their own idea bubbles also occurs with other issues. An example is vaccine skepticism, which has led to lower inoculation rates in Republican counties and more deaths from COVID. We also saw how inaccurate, one-sided information regarding the allegedly "stolen" presidential election led to a deadly riot at the U.S. Capitol on January 6.

But there is a solution to this problem, which can be found in how social media companies deal with COVID misinformation. When it comes to COVID, social media posts deemed false or misleading are flagged and given a link to provide the user with trustworthy information about the virus from an organization like the CDC or the WHO. According to a [January 2021 study](), this approach generates an increase in positive attitudes toward the vaccine among those who view the flagged posts. Providing an easy option for people to learn more seems to make them better informed.

The solution to the echo chambers created by our current social media system might be similar. If a user shares a story or makes a post regarding a hot button, heavily debated issue, a link should be provided at the bottom (with a title such as "See other viewpoints here") to give the viewer multiple opinions on the topic. Posts warranting a link could be identified by keywords, such as "microchip" or "election fraud" or "defund". The link would send the user to a page with links to articles covering various views of the issue. For example, a post about defunding the police would have articles discussing the movement's positive achievements, and others discussing its drawbacks.

Providing users with this option could curb the self-reinforcing conversations that occur amongst high schoolers on social media, and allow opinions from more perspectives to be heard. Even if students did not click on the link to get more information, the simple act of providing it would prime them to understand that there are other viewpoints out there. Doing so could begin to chip away at the echo chambers of social media by making its users better informed.

The Story of America's Healthcare: Told through the perspective of a foreign high school student by Lina Piao

Growing up in Japan and China, I never thought much about the healthcare I was provided. From when I was a newborn, I was constantly in the hospital due to childhood asthma; the hospital was not my second home, it was my first home. But the thing was, all my hospital stays and hospital visits were accounted for by either my government or my parent's medical insurance.

As I grew older, I started realizing that my norm wasn't "the norm". It wasn't universal.

In 2020, COVID-19 permeated the globe, causing distress, changing lives, stealing loved ones; our world was shaken from its core. However, COVID-19 was not the disease, it was the symptom of a crippling healthcare system worldwide. It was a horrendous indication of the dire changes that our healthcare system needed. COVID-19 is not just the story of a pandemic. It is the story of who wins and who loses. A story that was repeated over history. A story that was shunned away. A story that needs to be told.

The United States is an economic and military powerhouse of the world and its cultural influences can be seen everywhere. From the Starbucks I'm writing this article in, to the MacBook that I am typing on, and even to the music that I am listening to; American culture is infused into my everyday life. Becoming a military superpower in 1898 to becoming the world's largest national economy, the US has always been at the forefront of innovation and advancement. Yet, it falls behind all other MEDCs (More Economically Developed Countries) when it comes to healthcare. To understand this phenomenon, I first looked into the system.

The healthcare system in the US is a combination of private and public fundings. The majority (67.3%)[1] of insured Americans are under private insurance which is partially or fully subsidized by their employers as a part of their work benefit. Within this insurance, individuals or employers need to make regular payments known as premiums and the insurance company pays some or all of their medical bills. The charged fees depend on the managed care plan that the individual is enrolled in; different private insurances negotiate different prices with the health

service providers.[2] For those who are unable to afford private insurance, there are three government-funded programs that are available. These include Medicare, Medicaid, and Children's Health Insurance Programs (CHIP). Medicare is primarily for seniors (aged 65 and above) or for people living with disabilities, and it is a national social insurance that is administered by the federal government. Medicaid is administered by the state government and is accessed by those considered poor and near-poor. Children's Health Insurance Program, also known as CHIP, administered by the state, insures children up to age 19 from families with incomes above the Federal Poverty Level ($26,500 in 2020).[3][4]

However, there is a significant discrepancy between the spending on health compared to the quality of care.

In 2013, the United States health expenditure per capita was $8713, a staggering value, which was more than double the OECD average of $3453.[5] Similarly, in 2018, the US spent 16.9% of their GDP on healthcare, which is roughly twofold the OECD (Organisation for Economic Co-operation and Development) average of 8.8%.[6] It is clear that a significant amount of the money generated in the American economy is flowing towards healthcare. Yet, data shows no translation between higher spending and better health outcomes. Instead, it is quite the opposite. The United States has the worst life expectancy among OECD nations of 78.6 years in 2017; more than two years below the OECD average.[6] What's more, according to Health Cost Institute, the annual price of healthcare has been increasing year after year with a rate 15% higher in a span of 4 years.[7] This ties in with the fact that more than two-thirds of the people filing for bankruptcy cite medical bills as their main contributor.[8]

In order to ameliorate the situation, actions have been taken by the Federal Government such as the Affordable Care Act (ACA, also known as Obamacare) in 2010. Through the ACA, the government expanded insurance coverage for American citizens through a mandate which required all uninsured individuals and families to purchase at least a basic form of insurance. They also created insurance exchanges, commonly known as marketplaces, which is regulated by both the federal and state government to help individuals and firms find appropriate and affordable insurance plans. Here private insurers cannot deny insurance to people with pre-existing conditions nor rescind their policies. The ACA also put forth a minimum standard

for service that private insurance plans must provide.[9][10] However, as statistics above show, it was not changing the situation that much. In the Lown Institute's Judith Garber's words, "The ACA minimum standards are doing a good job being what they are, a minimum". Radical changes were required within the healthcare system. So if it's so clear that American healthcare needs a better administration, why can't we consider a universal healthcare system?

The answer to this question was not as simple as it seemed.

To understand the situation better, I asked some of the teachers in my school that were from the States about their opinions on a universal healthcare system, and why it wasn't happening back home. An interesting conclusion I arrived at was that a majority of the teachers were in support of universal health coverage. They just didn't think that it was going to be possible.

An optimist at heart, I interviewed the teachers and researched to see why it was so hard for the United States to implement a new healthcare system.

An obvious reason was that creating a new law, new legislation, would be far too complicated and that it would come with so many details and ramifications that are far beyond our comprehension. Especially regarding a sector that has great implications on both the well-being of citizens, the state of the economy, future politics, and so much more. There are also criticisms from the opposition stating the inefficiencies that would be caused by universal healthcare as seen in Canada's single-payer system. Their fear for change causes resistance, and anxiety tells them that it is fine the way they are right now.

However, the reasons why it is so convoluted have far wider complications that are deeply tied in with American ideology, politics, and history.

A famous term coined by Herbert Hoover, "rugged individualism", is part of what hinders the move towards universal healthcare. Rugged individualism, in simple terms, means the ideal where an individual is completely self-reliant and independent. It is a belief where personal liberty is emphasized and deemed to be the way to success.[11] A popular term in today's world, "personal responsibility" is just that. "Some Americans love the idea of making their own destiny", says Matt Phillips during our discussion, "they work hard for themselves, to make their own destiny. They don't want to be interfered nor do they want to interfere with another's

destiny." These people are willing to pay for their own care, but they do not want to pay for others. Their philosophy is that if one gets sick, it is his/her responsibility, not theirs.[12] This is deeply rooted in American history when "E Pluribus Unum" ("out of many, one") was chosen as the national motto by the founding fathers in 1782.[13]

This idea of "liberty" created by individualism also underlies impediments against universal healthcare. In heated debates regarding health reform, people fear that "liberty" is being threatened. They perceive that if the government were to be in control of one area of what is currently regarded as the "private sector" then it would cause a snowball effect leading to "loss of choice" in all economic decisions and soon the loss of a free market.[13] Some extremist views even compare universal health coverage to socialism and communism. Media against such reforms create a narrative equating them to George Orwell's 1984.

This coincides with my second point about politics being the base of the resistance to universal coverage. One distinct memory I have from the news during the 2020 election was the baffling number of people who were attending rallies without their masks since they were Trump supporters.[14] Masks, an essential PPE to protect oneself from a virus, were attached to a political view. It is evident that we live in an age where many people's identity is strongly associated with their political views; whether they are left or right, blue or red, democrat or republican. Therefore, in order for the majority to come to a settlement regarding universal healthcare, it is essential for a bilateral agreement to be made. However, in a day and age where there are fewer and fewer things that the opposing parties are agreeing on, it seems like a far way to go.

The second issue with politics is lobbying. Due to the Madisonian system, United States does not have any particularly strong political party, and the absence of strong parties results in money having a major influence in US politics, greater than in any other nation.[15] Any individual politician has a chance at success without the support of a political party for as long as they have great personal wealth and sizeable monetary contributions. This is where lobbying comes in. Lobbying is when an organization of people, industries, or parties influences an authoritative entity, usually through financial means, and it is very much legal.[16] These lobbyists are able to control the media and politicians in the direction they choose. As Ezra Klein from Vox says, "This is the irony of American healthcare: it's so expensive that it has become harder to make it cheaper".[17] Due to the wealth that pharmaceutical companies, health insurance

provides, and hospitals accumulated through price gouging, lobbyists have become far too powerful.

During an interview, Lown Institute Health Policy Fellow Judith Garber mentioned how pharmaceutical companies were spending their money on lobbying and marketing. "The biggest argument made by pharma [pharmceutical companies] is that if they put a cap on the price, it would stop them from making new drugs and halt innovation. But if you look into where the expenses go, they don't go to real innovation. More the money goes to lobbying and marketing than research and development," she explained.

In 2019, Bernie Sanders introduced a new bill known as Medicare for All. The key players of the healthcare industry, who are usually in dissension, agreed on one thing: Medicare for All (a single-payer health platform) cannot become a law. According to Open Secrets, Partnership for America's Health Care Fund (PAHCF) has lobbied members of Congress and ran negative ads of Medicare for All to downsize its popularity. What's even more surprising is that the partnership included the main drivers of healthcare; the American Medical Association, Pharmaceutical Research & Manufacturers of America, the Federation of American Hospitals and Blue Cross.[18] The people, the organization, the entities that are supposed to be serving the people and protecting the well-being of the American citizens were doing the exact opposite.

However, this was not the first time that this has happened. Every time a president tried to make changes to the nation's healthcare, the AMA (American Medical Association) lobbied hard against it. These include Franklin D. Roosevelt's plans for federally sponsored health insurance to be part of Social Security, Harry S. Truman's national healthcare plan, and John F. Kennedy's efforts for universal healthcare.[19]

As with any different matter, the deeply rooted American history of racism has played a crucial role in America's healthcare system. During the interview with Ms. Judith Garber, one sentence struck my mind, "with the anti-racism initiative, it's pretty hard to argue against universal healthcare".

"Racism has also been a major reason why universal healthcare has not been implemented. There is an idea among many Americans that universal healthcare benefits would be going to people they think are undeserving," she clarified. Upon hearing her statement, I decided to do some research.

Evelynn Hammonds's quote from a New York Times states the truth in a very succinct manner, "'There has never been any period in American history where the health of blacks was equal to that of whites'". In the same article, countless events are mentioned in which racial segregation was seen within federal healthcare programs. A quote by an Ohio congressman summarizes everything there is to know, "'No charitable black scheme can wash out the color of a Negro, change his inferior nature or save him from his inevitable fate.'" In 1945, when President Truman expanded the nation's hospital system as part of a larger health care plan, Southern Democrats passed the Hill-Burton Act which ensured that states were able to segregate facilities built on government funds. This led to black doctors being prohibited from working, black students being excluded from medical school, and hospitals and clinics segregating black patients. Furthermore, black Americans were denied most jobs that offered health insurance. When the National Medical Association, a black medical society, called for action from the federal government, the AMA called their actions "socialistic" and "un-American" warning government intervention among citizens.[20] It sounds oddly familiar to something we heard before.

So why bother if it's so complex? Well, that's because healthcare isn't supposed to be like this. It's not "just another commodity".

"There's a thing in economics called "Market Failures" and it's where capitalistic markets don't work. This is usually the case for things you have no choice to buy, which is called inelastic demand. Since you don't really have a choice whether or not you get it, the price can be anything and you still need to buy it." states Ms. Garber, "Take insulin as an example. People with Type 1 Diabetes will die without insulin, and the price has skyrocketed since only 3 companies make it and they have cornered the market". She is absolutely correct. You cannot say no to receiving healthcare because it's when you are most vulnerable and most scared. You need someone to say it for you instead - your government.

The idealist in me couldn't help but wonder if it was ever possible for there to be a universal healthcare system in the US, and through my conversation with Ms. Garber, I couldn't help but become hopeful for the future.

"A lot of it is a framing issue and marketing the idea of universal healthcare. We need to show the people that not all universal healthcare is single-payer like Australia, Germany, and Singapore. We need to let them know that there is a spectrum of different coverage that people

can have. People really like Medicare, especially those who have it. Medicaid too. We can slowly expand coverage. People who have it don't want it to be taken away, as in the Affordable Care Act. People like having healthcare and there's no real plan to replace it. It's about looking at what's successful and building on what people like. We can slowly spread Medicare to more people and lower the threshold so that the public programs can cover more people." describes Ms. Garber. "We can also raise the floor of minimum access. The base-level has to exist like including eye care, dental care, and hearing aids as part of Medicare and Medicaid"

Especially in light of the knowledge that the government were to provide health insurance, medical bills would not as costly for individuals as it is now; Medicare would provide more economical prices for all medical procedures.[21]

What's more, as mentioned in the quote above, it doesn't have to be a single-payer system. Instead, it could be an "All-payer rate-setting" system which Ms. Garber calls "salary for hospitals". Already implemented in Maryland, prices of the procedures in the hospital are set (to the price of procedures with Medicare) and all hospitals are given a set budget for each patient. This encourages hospitals to keep the patients out of the hospital as the fewer patients that come back, the more money they make. Ms. Garber mentions that she has heard anecdotes about hospitals working hard to keep the patients out through measures such as preventative care. It has been saving the state a considerable amount of money, but the health benefits are still to be seen. Ms. Garber seems hopeful for this system stating that "COVID-19 has taught doctors and hospitals that they want stability, and that is possible with this system because they don't need to rely on patients coming in for treatment".

Regarding the salaries of physicians, Ms. Garber also mentioned the importance of caring for their well-being. "Doctors feel like they are cogs in a machine," she states, "There are so many things that the physicians have to do like spending hours writing up medical records, meeting performance standards that don't make a difference to patient care, and being told to see as many patients as they can, that can suck the joy out of the job." She believes that an essential way of paying the physicians is not just augmenting their salaries but making physicians happier with their jobs because "you can't put a price on well-being".

There's so much we, normal citizens, can do too. Ms. Garber notes that "there are lots of great organizations that people can devote their time to" in any given local community, and that any individual could always "write to a congressperson or senators about what you think".

"The BLM [Black Lives Matter] protest has shown us that not one person alone can make a difference but with a communal action, a lot can happen." Ms. Garber stated with.

After giving it some thought, I came to my own conclusion. Universal healthcare is essential, and we, as a society, must help those in need. It's not a matter of morals, a matter of ethics, or a matter of who's responsible for whom. Rather, it is because we are all dependent on one another. As much as we are all individuals, all different, and all one of a kind, it doesn't mean that we are independent.

Through all the subjects that I study in high school, if there is one common theme, a shared understanding among the subjects, it is that we are never truly an independent "self". Literature apprised me that in our thoughts and our experiences, we are never alone. Economics taught me the interdependence between different agents and the invisible chain reactions. Chemistry told me that everything is relative to "something". Physics showed me that no action is singular and that there is always an equal but opposite reaction. Math explained to me how everything including concepts is based on one another.

Just as modern-day is built on history, we are a collection of our "yesterday"s, and yesterday has no sole creator.

The extent to which we are dependent may vary from person to person, but we can never exclude ourselves from society and truly be, by definition, independent. That's why everyone matters. That's why we cannot forget someone nor leave behind somebody. We need everybody for our own survival, and that is the nature of our world. This is why universal healthcare is indispensable, a human right.

As the story of healthcare gets told and gets written, I hope that the ending's nice. Nothing beautiful, nothing too peculiar. Just a nice little ending.

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An analytic and feasible action plan on colonising polar regions to ensure continuity of mankind by Saif Ahmed

Preface

The United Nations projects that the global population will reach **9.7 billion people in 2050**. The current level of growth of the human population has taken shape as the biggest anthropogenic disaster to Planet Earth. Most scientists think Earth has a maximum carrying capacity of 9 billion to 10 billion people. Population growth is a key driver of emissions, shortage of food, water and other resources, pollution, biodiversity loss, and disease emergence and spread.

And still, large scale colonisation of space seems impossible, because of factors like high cost,
inadequate resources and inadequate technological advancements. This makes us look for other areas on earth which are yet to be inhabited by mankind.

The Idea

Extensive research on the idea of inhabiting the polar regions, which is a very cost effective and practicable method, and which can be implemented in the near future, led to the creation of 'Aviskara Samudra', a self-sustainable habitat conceived for use by aquanauts, eskimos, tourism and oceanographic life sciences and long term human, plant and animal habitation. This bold but creative idea was honored with a selection to the International Space Development Conference 2019.

Practicality

Global warming means sea levels will increase, so humans will have less land to live on. Architects, town planners and policymakers will eventually decide there is nothing they can do to effectively stop the sea from rising, and will suggest building towns on the ice and water. Most of the Earth's surface (71%) consists of water. If that
proportion is going to increase due to climate change, perhaps humans should consider living in the sea.

Polar cities have everything humans need to thrive - the water itself can be used to create breathable atmospheres and generate hydrogen fuel through the process. Salient-resistant vegetation can be used as crops in the sea to feed us. They'll generate fuel and breathable atmospheres through electrolysis, 'cracking' seawater to produce hydrogen (for fuel cells and nuclear fusion power) and oxygen. Mechanical energy from wave action, and solar power will further augment these cities' reserves. A string of generators on the spiral will also generate energy using differences in seawater temperatures, a process known as ocean thermal energy conversion. Desalination will distill drinkable water for public use.

Feasible construction materials

Making larger habitats with multiple modules made of steel, glass and special cement used underwater would be simpler than trying to create one giant bubble. These smaller structures could be added or taken away to create living space for as many people as desired. Most likely, we wouldn't want to build any deeper than 1,000ft
(300m), because the pressures at such depths would require very thick walls and excessive periods of decompression for those returning to the surface.

Transport and communication

Drone boats, trade ships, tourist ships and boats are feasible modes of transport. Submarines are useful for underwater research and aquanauts.
The settlements will have their own base station, which are in turn connected to a unified VSAT system for satellite communication, through which the on board base station can reach the regular phone network on shore.

Life support

Water supply will be used for electrolysis, decomposing water into oxygen and hydrogen gas. Breathable oxygen will be produced by this method in large quantities. The reaction taking place is: $2H_2O(l)\text{-}2H_2(g)+O_2(g)$. If brine is used for electrolysis, chloride ions will be oxidized to chlorine instead of water oxidizing to oxygen. Therefore, purified desalinated water will be used for oxygen production and not chlorine. The hydrogen produced will then be burned and converted to water. Settlements will have air pressure roughly equal to atmospheric pressure.

Aquaponics, hydroponics and aquaculture will cater to the nutritional needs of the population, while normal agriculture will also be done in the nearby islands or on the ice surface and food will be transported to the settlement according to needs reflected by the population. The settlement will obtain water by reverse osmosis. The RO membrane processes use semipermeable membranes and applied pressure (on the membrane feed side) to preferentially induce water permeation through the membrane while rejecting salts. Tidal turbines will be built at a distance from the settlement down in the ocean. The turbines are commonly placed in front of entrances to bays and rivers where water flows significantly faster than in the open ocean. These turbines spin rapidly as water passes over them and that spinning motion generates usable electricity. The main benefit to using tidal turbines rather than windmills to create electricity is that water is 832 times denser than air according to Marine Current Turbines. That means marine turbines generate significantly more energy than wind turbines do when sized the same.

Governing bodies

Unlike many Earth governments, the polar cities have the added task of running a complex settlement. One of the first things the newly elected City Council would do would be to hire a Director of Operations to manage the city's technical infrastructure. The Director of Operations would be an employee of the City Council and therefore would be held responsible to the people of the colony. If the Director failed to adequately meet the needs of the public, the council would have him or her removed. It is the Director's responsibility to make sure that the contractors were doing their job sufficiently. If the Director and the City Council felt that the contractor was not competent enough, the contractor would be replaced. The law enforcement in the colony would consist of private security contractors and one Head of Security to control crime and air locks. A bill of rights based off the UN Declaration of Human Rights, would be included in the colony's Constitution to prevent any police brutality or human rights abuse.

Trade, business and industries

Trade will be very important for the polar colonies. Trade of metals, minerals, food, products and other items will be done extensively. The City Councils would have detailed business

models and plans to show its capacity to earn profits. The costs incurred by the governing body would be primarily recovered through a variety of business plans. The infrastructure for the setup will require a heavy investment. Costs would be recovered mainly through the following heads:-

1. Crude Oil & Refined Products Sale:

Despite some Environmentalist concerns, oil will be mined for the sustenance of the settlement. Oil mining is one of the reasons for which government help will be needed as it is now considered an issue of international concern and any oil mining setup would need approval on many different forums. An oil refinery will be setup for refining the raw oil into petroleum that can be used for production of energy. The oil refinery will not process the surplus as refining under the sea without polluting the water is a very difficult process and the surplus crude oil is better sold than processed.

2. Salt & Minerals Sale:

The Desalination plant which will be used to decrease the salinity of the water will produce a lot of salt of commercial value for mineral companies and for production of cosmetics & other commodities.

3. Tourism

Tourism will play an important role in the economic development of the colonies as they will serve as ultra-modern hubs of ecological research and technological advancements.

Research Activities

1. Oceanography:

Conditions in the deep-waters will be recorded and analyzed in detail to pick out various factors that affect the region. Weather phenomena will be studied and the effects of the convergence of tectonic plates near the colonies will be identified and will contribute to the ecological research of the colony.

2. Microbial Life Research:

Mats of salt-water prokaryotic bacteria have been identified in the deeper parts of the polar regions. These prokaryotic organisms are of immense interest to biologists and labs will be set up for their study. Efforts will be made to identify important genetic factors that led to the adaptation of these organisms to the salty environment.

3. Sea Floor Samples:

Samples of the sea-floor will be taken by researchers who will then study these in labs. The mineral content of the sea-floor in the polar regions is quite different from normal bodies. Sea-floor samples are important for research on the formation of the earth's water bodies. Mineral labs will study mineral extracts and samples and the resources which can be found for the habitat from deep sea expeditions.

4. Operations Research:

Research will also be done to improve and facilitate operations on the settlement. These include research on agriculture, deuterium mining, oil reserves etc. Special labs and machinery will be provided foe dedicated research. AgroLabs focus on improving the quality and quantity of crops and the conditions to grow them and fulfil nutritional needs by new technologies and better cultivation methods optimizing the resources available. The labs will carry out plant testing and feed analysis to detect growth cycle deficiencies. They will work towards improving cropping patterns, irrigation methods, crop variety improvement, food storage and management processes.

5. Biotech Labs:

The purpose of biotechnology labs will be to advance and create new equipment for agriculture and human aid. They will carry out the study of DNA molecules and create hybrid varieties. Biomechanical apparatus will assist in agrarian processes. Scientists and researchers will aim to develop scientific techniques and solutions based on understanding of DNA. The varieties will be improved by selection and breeding of desirable traits. Agricultural biotechnology will include

genetic engineering, recombinant DNA technology, hybridization, tissue culture, molecular marking and other processes. Hypophysation and inducing synthetic hormones will be studied and carried out for improving fish breeding. These technologies will help increase the production in a shorter period of time.

6. Marine Life Research:

Marine labs will carry out surveys and studies of marine life. The aquatic flora and fauna will be vastly studied and divers will go for exploration trips. The marine organisms in the enclosed fisheries will be observed and various underwater resources will be searched and used by the settlement.

Conclusion

As we discussed earlier, large-scale inhabitation in space seems impossible, because of factors like high cost, inadequate materials and many other factors. There are many advantages to polar living. There would be beautiful insights into underwater life. There would be relatively low maintenance. It would be easy to be self-sufficient. Hydroponics could be used, brine desalinated to get fresh water, a current turbine would generate power, and fish farms would meet nutritional needs. You could pump in air from the surface or have air scrubbers. The surface air would probably be better since it would be depressurized. And in case the sea melted out due to global warming, which will take a considerable duration of time, such colonies would still survive as they are designed for that purpose. Building underwater offers several advantages. The main advantage is simply, saving space. In extremely cold climates it can offer a stable temperature year-round, leading to lower heating bills and greater energy efficiency. Intense heat and high humidity levels can also cause problems for construction projects above ground, so moving underwater may be beneficial in hot climates as well.By their nature, underwater buildings are likely to include other eco-friendly features too, which can help reduce the environmental impact of the building. It may seem inevitable that the future of human life on earth is underwater, but humanity is ready for it.