

Exploring Lexical Challenges of English for Arab Interpreters in Consecutive and Simultaneous Translation: An Error Analysis Approach

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Abstract: This study examines the lexical challenges faced by Arab M.A. translation students at Yarmouk University, Jordan, during consecutive and simultaneous English-Arabic interpreting. Adopting an Error Analysis framework, it identifies and categorizes lexical errors from students' final examinations, evaluating their frequency, types, and impact on meaning transfer and interpretation quality. The findings reveal that lexical errors often distort the original message, sometimes resulting in a hybrid or disjointed output. The study argues that interpreting into English presents greater difficulty for Arab students due to linguistic and cultural asymmetries, and that many lexical errors arise not only from knowledge gaps but also from cognitive and situational pressures, such as time constraints and psychological stress. By offering a detailed taxonomy of lexical errors and exploring their underlying causes, the study contributes to a deeper understanding of the cognitive demands of interpreting and proposes pedagogical strategies to enhance interpreter training in Arabic-English contexts.

Keywords: *interpretation, translation, simultaneous, consecutive, lexical challenges, MA students, time constraints.*

1. Introduction

Translation plays a pivotal role in cross-cultural communication, especially where linguistic diversity demands precise meaning transfer. Interpretation, whether consecutive or simultaneous, is a cognitively intense process requiring more than linguistic proficiency. This research addresses the lexical challenges faced by Arab interpreters, where errors may arise from time constraints, cognitive overload, or lack of familiarity with terminology. Unlike translators, interpreters cannot rely on written aids, making their task significantly more error-prone. Misinterpretations, especially at the lexical level, can compromise the communicative intent and create serious misunderstandings in real-time discourse.

Significance and Rationale:

This study provides empirical insights into the causes and consequences of lexical errors in interpretation. While previous research emphasizes linguistic competence, this study highlights the interplay between language knowledge and cognitive processing. The results aim to assist educators in designing targeted training modules and inform theoretical models on interpreter performance. The study further challenges the notion that lexical errors stem solely from poor language proficiency, revealing instead their roots in stress, divided attention, and real-time processing demands (Ferreira, 2014; Ferreira & Schwieter, 2022).

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Objectives of the Study:

This study aims to:

- Identify and categorize lexical errors in interpretations by M.A. translation students.
- Measure the frequency and severity of these errors in consecutive and simultaneous modes.
- Analyze cognitive and contextual factors influencing error occurrence.
- Assess the impact of these errors on message accuracy and tolerability.
- Recommend pedagogical strategies that address and mitigate lexical challenges in interpreter training.

2. Literature Review

A growing body of literature has explored the nature of interpretation errors, yet there remains little consensus regarding the relative significance of syntactic versus lexical challenges. Al-Jarf (2021), for example, found that syntactic errors were predominant among Saudi EFL students, attributing these to limited grammatical training. This aligns with structuralist frameworks that emphasize mastery of form and sentence construction. In contrast, Aluthman and Al-Buraidi (2024), in their study of Arab postgraduate students engaged in consecutive interpreting, argue that lexical challenges, particularly those involving coherence and terminology, are more disruptive, especially under the time constraints of real-time performance. Their findings suggest that lexical errors, rather than syntactic ones, are more closely tied to cognitive overload during processing.

The divergence in these findings may be attributable to differences in modality, task type, and interpreter experience. Syntactic errors may be more visible in written translation or consecutive interpretation, where there is greater opportunity to process grammatical structure. Conversely, lexical errors tend to be more prevalent in simultaneous interpretation, where time pressure intensifies the likelihood of incorrect word choice, omission, or substitution. Supporting this perspective, Reema and Hind (2024) observed frequent use of omissions, substitutions, and literal translations as coping strategies for lexical strain. Notably, their findings revealed no direct correlation between L2 proficiency and lexical error frequency, indicating that such errors may arise more from cognitive demands than linguistic deficits.

Theoretical frameworks also shape how researchers interpret error patterns. Aluthman and Al-Buraidi (2024) employ Gile's Effort Models (1995) to demonstrate how interpreters experience lexical breakdowns under cognitive load during dense input. This is echoed in Ferreira and Schwieter (2022), who argue that lexical access failures often result from divided attention and memory constraints in simultaneous tasks. The critical importance of lexical precision is particularly evident in specialized domains. In legal interpretation, Al-Shehab and Rababah (2020) emphasize the significance of accurately rendering fixed expressions and polysemous terms, as lexical errors in this context can lead to substantive miscommunication. Similarly, Ghaza'ee and Ali (2019), studying Kurdish-English interpreters, highlight cultural mismatches and polysemy as primary lexical challenges, reinforcing the role of domain knowledge in ensuring accurate lexical rendering.

Directionality also emerges as a significant factor influencing interpreter performance, particularly in consecutive interpreting (CI). Lu et al. (2023), using the PRISMA framework to systematically review 26 studies, examined how directionality affects CI performance across various contexts and methodologies. They found that unbalanced interpreters, typically students, tend to demonstrate greater fluency when interpreting into their L1, but higher accuracy when interpreting into L2. By contrast, balanced bilingual professionals appeared largely unaffected by directionality. The study highlights the need for further research and directionality-sensitive training, while noting limitations related to the scarcity of CI-focused studies. Complementary findings by Reema and Hind (2024) suggest that L2-to-L1 interpretation often results in more literal translations and increased hesitations, underscoring the cognitive and lexical challenges that directionality imposes.

Pedagogical strategies have recently gained prominence in efforts to address interpretation challenges. Hasan and Mahmoud (2023) examined the effects of pedagogical interventions on reducing lexical errors among Arab interpreting students. Their research emphasized the value of glossary creation, terminology drills, and real-time simulation exercises. They argue that the ability to actively retrieve terms under time pressure is central to developing lexical resilience. Students who engaged in

structured terminology preparation made fewer lexical omissions and substitutions, particularly in political and technical contexts. Yang and Mu (2024), focusing on Chinese postgraduate interpreting students, found that pre-task planning and topic familiarity were strong predictors of lexical accuracy. Unlike Hasan and Mahmoud, who emphasize terminological preparedness, Yang and Mu (2024) highlight the importance of cognitive and situational readiness, arguing that disorientation in unfamiliar domains often leads to higher error rates, even among linguistically proficient students.

Together, these studies emphasize that lexical accuracy is influenced not only by linguistic competence but also by the interpreter's cognitive and procedural preparedness. This alignment reinforces the importance of interpreter training programs that combine domain-specific preparation with real-time practice, bridging the gap between theoretical knowledge and practical performance.

Taken collectively, the reviewed studies indicate an emerging yet nuanced consensus: while syntactic challenges may dominate in specific learner populations or task modalities, as seen in Al-Jarf (2021), lexical errors appear more sensitive to task demands, cognitive strain, and contextual specificity. This variability underscores the need for interpreting research models that integrate both linguistic and cognitive dimensions. Differences in modality further complicate this picture: simultaneous interpreting often burdens interpreters with rapid lexical retrieval, whereas consecutive interpreting allows more time for structural processing, potentially shifting the balance of error types. Hence, modality itself may be a determining factor in the prominence of syntactic versus lexical errors.

3. Methodology

This study adopted a mixed-methods research design, incorporating both qualitative and quantitative approaches to examine the lexical difficulties encountered by Arab M.A. translation students in consecutive and simultaneous interpretation. The quantitative phase utilized an error analysis framework to identify, categorize, and statistically assess lexical errors in student examination recordings. By analyzing interpreted texts, the study quantified the prevalence and variations of lexical errors, providing measurable insights into their occurrence.

The qualitative phase further examined contextual and cognitive factors underlying these errors. Through detailed interviews with participants and expert interpreters, combined with thematic analysis of performance reflections, the study revealed the root causes and situational influences underlying lexical challenges. During data interpretation, quantitative and qualitative results were cross-referenced to enhance the validity and depth of conclusions. This dual approach provided a nuanced understanding of error patterns, yielding actionable pedagogical implications for interpreter training.

3.1. Population:

The participants comprised 13 M.A. students enrolled in interpretation courses at Yarmouk University, Jordan. Group one (7 students) completed a consecutive interpretation course; Group two (6 students) completed a simultaneous interpretation course. Each student recorded a 90-minute final examination.

3.2. Data Collection:

Each course had structured final exams comprising texts in Arabic and English from journalistic, political, and scientific domains (Appendixes 1–7). All texts were recorded by native speakers, and students interpreted both into and from English and Arabic. Transcriptions of the recorded sessions were analyzed for lexical errors.

3.3. Analytical Framework:

The analysis employed Gile's Effort Models (1995, 2009) as a theoretical foundation, which partitions interpretation into listening, production, and memory efforts. Errors were mapped to these components to infer cognitive sources. A frequency analysis identified prevalent error types, while thematic coding classified lexical errors into distinct categories and explored contextual causes and interpreter strategies.

The consistency of error classification was verified through independent analysis by two raters. Cohen's Kappa coefficient, which quantifies inter-rater agreement while adjusting for chance, yielded $\kappa = 0.78$, indicating substantial reliability (Landis & Koch, 1977). This robust agreement confirms the replicability of the classification methodology.

To ensure methodological precision in error classification, overlapping categories were rigorously defined according to their linguistic parameters. The "Choice of Words" category encompassed lexical inaccuracies where selected terms failed to convey the intended meaning or function, e.g., substituting "make" for "do," or translating the Arabic "muqāwama" as "opposition" rather than the contextually appropriate "resistance" in Appendix 3's political discourse. Conversely, "Collocations" captured errors involving non-native word pairings, lexically correct in isolation but violating target-language conventions, e.g., rendering "khaṭar jāsim" as "huge danger" instead of the idiomatic "grave danger" in Appendix 5's journalistic context.

Categorization prioritized the primary linguistic deviation to eliminate redundancy. Lexical inaccuracies independent of context were classified as "Choice of Words," whereas errors arising from incongruous word combinations were assigned to "Collocations." In cases where both issues coexisted, the dominant communicative lapse determined the final classification. This context-sensitive approach not only enhanced the fidelity of error representation, but also illuminated the cognitive-linguistic demands inherent in real-time interpretation.

3.4. Accounting for Cognitive Load and External Variables:

Given the critical role of processing capacity in interpretation performance, cognitive load under time constraints was treated as a primary experimental factor. Simultaneous interpretation, by nature, imposes exceptional demands on working memory and attentional resources. To isolate these effects, the study compared error distributions across modalities (consecutive vs. simultaneous), mapping characteristic errors (e.g., omissions, literal translations) to phases of cognitive overload, as theorized in Gile's Effort Models. Text complexity, task duration, and assessment conditions were standardized to minimize confounding variability.

Although stress-related variables were not directly quantified using physiological indicators (e.g., cortisol levels), they were controlled through environmental standardization. All interpretation tasks were conducted in identical settings with consistent time allowances to reduce performance variance linked to situational anxiety. Moreover, instructor evaluations and student self-reflections were reviewed to help identify and exclude performances that were unusually affected by stress or fatigue. Procedural safeguards were implemented to enhance internal validity, including:

- Familiarization: Practice sessions facilitated acclimation to task demands.
- Stimulus Control: Pre-recorded source texts ensured consistency in speech rate and delivery.
- Environmental Controls: Soundproof testing environments eliminated auditory distractions.

4. Results and Discussion

This section presents a synthesis of the findings on lexical challenges in English-Arabic interpretation, integrating quantitative data and qualitative observations. A total of 818 lexical errors were identified from thirteen 90-minute final examination recordings, categorized into twelve recurring types: Choice of Words, Omission, Redundancy, Ambiguity, Foreign Terminology, Misunderstanding of the Original Text, Collocations, Style/Register, Word Malformation, Literal Translation, Word Order, and Distortion of the Message due to Structural Differences between English and Arabic.

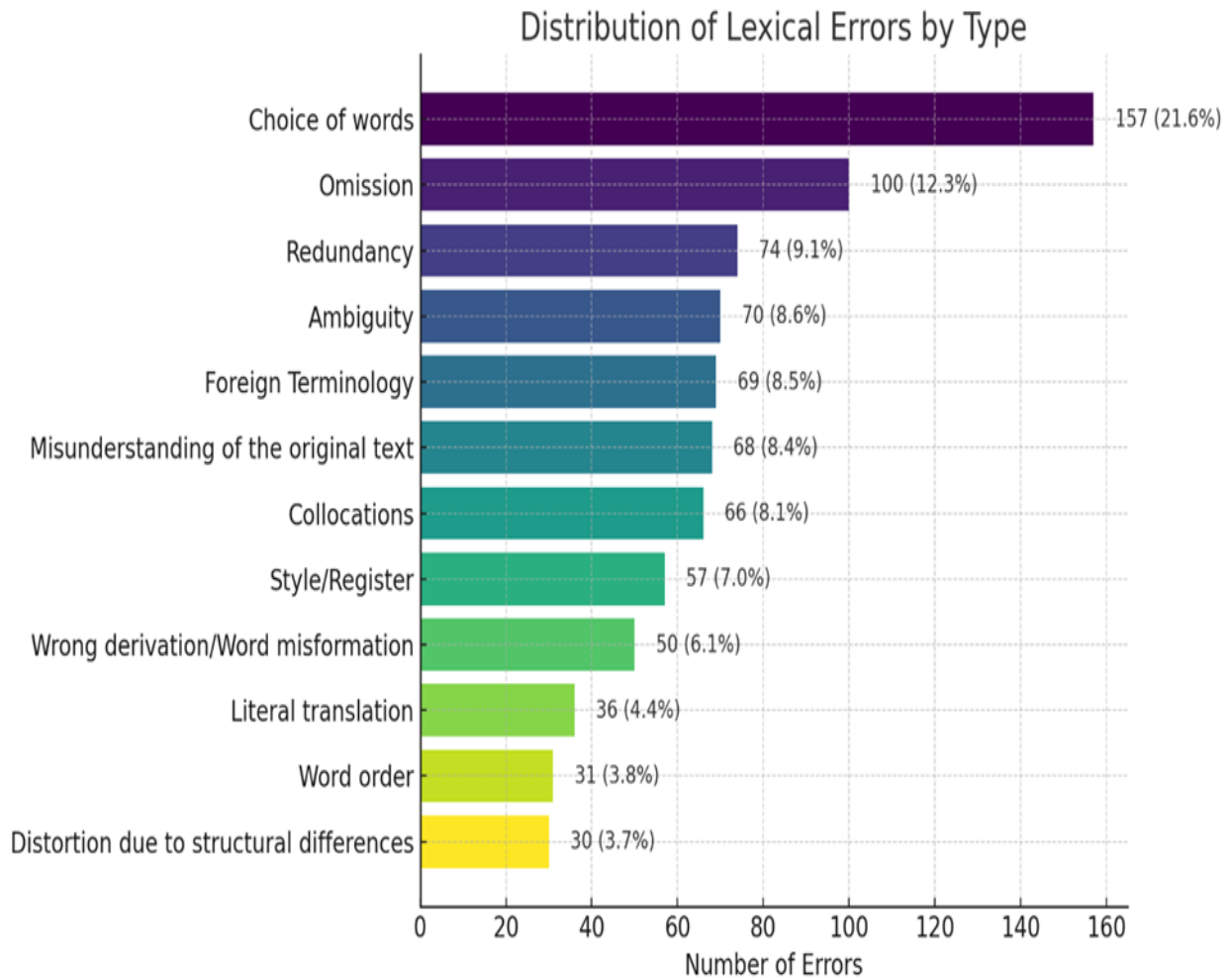
The analysis revealed that a few error types often overlap with syntactic issues, particularly in categories like "Word Order" and "Weak Structures," complicating strict lexical classification. Thus, researchers occasionally employed interpretive judgment when categorizing overlapping errors, especially in utterances exhibiting dual lexical and syntactic deficiencies.

No significant difference was observed in the overall distribution of lexical errors between consecutive and simultaneous interpreting modes. However, modality-specific patterns did emerge. Simultaneous interpretation, due to its inherent time pressure and cognitive demands, showed a higher incidence of omissions and literal translations. In contrast, consecutive interpretation more frequently exhibited reformulation failures, likely linked to memory retention and notetaking limitations. Directionality also

influenced error patterns: interpreting into L2 (English) resulted in more omissions, while interpreting into L1 (Arabic) led to higher rates of literal translations and inappropriate collocations.

Further analysis highlighted the influence of extralinguistic variables on interpreter performance. Lexical distortions were notably more severe in technical, political, and scientific content, particularly when interpreters lacked familiarity with the subject matter or encountered specialized terminology. Key contributing factors included cognitive overload and inadequate training in domain-specific vocabulary. While some errors had minimal impact on overall message clarity, others resulted in significant distortions, especially in culturally sensitive or highly specialized contexts.

The accompanying bar chart visually represents the distribution of lexical errors by category, percentage, and frequency. In the following subsections, each category is discussed with examples, commentary, and pedagogical implications, illustrating how specific error types reflect broader challenges in interpreter training and performance.



Total Number of Errors: 808

4.1. 1. Choice of Words

The issue of word choice reflects students' attempts in selecting precise vocabulary to align with the context and accurately convey intended meanings. This challenge is evident from the errors observed, which constitute a significant proportion (157 instances, accounting for 21.6%) of the total errors recorded in this study. Errors in this category underscore students' difficulties in identifying and employing appropriate lexical items effectively. This deficiency could be attributed to their limited exposure to practical experiences requiring immediate interpretation, such as speaking directly into a recorder during assessments.

The disparity between oral and written language production is notable. Oral tasks require spontaneous language use, limiting opportunities for monitoring and revision, which correlates with higher error rates. In contrast, written production allows for planning and editing, resulting in fewer inaccuracies. Examination conditions, particularly oral assessments, further exacerbate these challenges. Research indicates that time constraints and cognitive load during oral tasks can disrupt typical linguistic processing, leading to errors not observed in written tasks or low-pressure practice contexts.

The following examples illustrate common errors in word choice (underlined), along with their corrected versions (in parentheses):

- 1.1. Greek philosophers left their life in Egypt. (Spent)
- 1.2. He bridges the noblest ideals and supreme goals of humanity. (Summarizes)
- 1.3. He finds a meaning for his life when he recruits his learning to help ... (Employs, knowledge)
- 1.4. Alexandria kept as a minaret of science for different centuries. (Remained; many)
- 1.5. He finds a meaning for his being when he implies his science and efforts to help... (Life; employs; knowledge)
- 1.6. In this full scientific climate, many Arab scientists arise. (Overwhelming atmosphere; come to existence)

These examples illustrate students' tendency to substitute near-synonyms or approximate terms, which often distort or obscure the intended meaning. The corrections reveal a need for more precise vocabulary selection, indicating that the issue stems from challenges in immediate recall under pressure rather than a lack of linguistic competence. Importantly, these errors are primarily performance-related and do not reflect fundamental deficiencies in language proficiency. Research suggests that such mistakes arise from momentary lapses rather than ignorance, as students are often capable of self-correcting when their attention is drawn to the errors. This implies that, given sufficient time and reduced pressure, graduate-level students could markedly decrease their error rates. Consequently, these mistakes should be classified as performance errors rather than indicative of deeper gaps in language knowledge or proficiency (Künzli, 2009; Ferreira, 2014; Pöchhacker, 2016; Fanciulli, 2017). In real-world interpretation, poor word choice can alter or obscure intended meaning, especially in legal, political, or academic contexts where precision is critical. Substituting near-synonyms or vague terms may distort nuance, affect tone, or undermine speaker credibility. These errors highlight the need for interpreters to practice lexical retrieval under pressure and build familiarity with domain-specific vocabulary to minimize miscommunication in live settings.

4.2. 2. Omission:

Omission errors, the second most frequent at 12.3% (100 instances), occur when students exclude essential words, phrases, or clauses during interpretation. These errors often arise from gaps in English proficiency, source material misunderstanding, or exam-related stress, reflecting the multifaceted challenges of real-time interpretation. The omitted elements, noted in the corrections that follow, are essential for restoring the original meaning and maintaining coherence. Errors within this category can be classified into three main types (omission of key terms, fragments, and clauses). The following are illustrative examples:

2.1. Omission of a Word:

- 2.1.1. *"Arab were different from western..." → "Arabs were different from western people because..."
- 2.1.2. *"and Latin the main language of science." → "and Latin remained the main language of science."
- 2.1.3. *"which took the admiration of scientists and their" → "which took the admiration and attention of scientists and their"

2.2. Omission of a Phrase:

- 2.2.1. *"and they (trips) were near to myths." → "and their scientific journeys were near to myths."
- 2.2.2. *"We can count tens or even hundreds with prominent scientific figures." → "We can count tens or even hundreds of those, side by side with modern prominent scientific figures."
- 2.2.3. *"During the aggressive that the camp is facing" → "During the barbaric bombardment that the camp is facing."

2.3. Omission of a Clause or a Whole Sentence:

2.3.1. *"and the mutual relationships in which the south helps the south." → "and the mutual relationships to reinforce the principles of cooperation between south and south which they belong to."

2.3.2. *"and the United States and some of the western alliance to Israel..." → "and the bias of the United States and some countries that belong to the western camp towards Israel."

2.3.3. *"Caliphs used to attend the discussion circles and they used to learn a lot." → "Caliphs used to attend the gatherings of science and scientists; discussions and seminars used to be held under their supervision."

Academically, omissions critically affect message integrity, though not all stem from interpreter deficiencies. High-pressure, along with other external factors, such as speedy delivery, improper text segmentation, or high cognitive load, often force interpreters to prioritize general meaning over specific details. This trade-off is particularly evident when interpreters struggle to keep pace with the speed of the speaker.

The dynamic nature of interpretation, requiring simultaneous processing, comprehension, and translation while navigating linguistic nuances and time constraints, further complicates the task. Omissions frequently result from interpreters balancing these demands rather than linguistic incompetence. The correlation between omission frequency and speaker delivery speed highlights that such errors are often context-driven, with faster speech exacerbating omissions and slower rates enabling greater detail retention. Thus, omissions are more indicative of situational challenges than inherent linguistic shortcomings.

In real-world interpretation, omissions can lead to partial or distorted transmission of the original message, undermining coherence and informational completeness, especially in contexts like diplomacy, media, or academia. While some omissions result from strategic simplification under pressure, frequent or key-content omissions risk critical misunderstandings. These findings suggest the need for improved coping strategies, pacing techniques, and training under simulated time constraints to better manage cognitive load.

4.3. 3. Redundancy:

The issue of redundancy arises when students include superfluous and irrelevant material in their interpretations. This often reflects an attempt to rectify and compensate for missed content by filling pauses in the original speaker's delivery with additional information. However, these attempts frequently fail, as students tend to confuse the omitted ideas with subsequent points introduced by the speaker after the pause. The result is the inclusion of redundant material or fragmented statements, both of which detract from the coherence and clarity of the interpretation.

Redundancy errors constitute 9.1% of the total errors (74 instances), placing them third among the error types. These errors typically stem from ineffective listening strategies and the pressure to provide continuous output, which leads students to overcompensate rather than focus on accuracy.

The following examples illustrate typical redundancy errors:

3.1. "or rather very luxurious life." → "very" is unnecessary elaboration.

3.2. "and published by the constitution that is Al-dustor." → The phrase "the constitution that is" is redundant, as the name "Al-dustor" refers to a well-known newspaper.

3.3. "The Arab scientific civilization in learning was as a link between the Greeks and the modern civilizations." → The phrase "in learning; the article the" is superfluous in this context.

3.4. "But still they are references to the role of the others civilizations in it." → This incomplete and misinterpreted thought is vague and does not meaningfully contribute to the content.

3.5. "We cannot count all the dimensions of the achievements that..." → The phrase "the dimensions of" is unnecessarily verbose.

These examples demonstrate how redundant elements can obscure interpretation, resulting in imprecise and incoherent communication. The unnecessary portions in each case detract from clarity and could be removed without altering the intended meaning. Often, redundancy reflects a misinterpretation of the speaker's intent and an inability to distinguish essential from extraneous information, potentially confusing the audience.

Redundancy in interpretation, manifested through repetition, vague elaboration, or filler phrases, often results from interpreters overcompensating for missed content, losing focus, or struggling with confidence under pressure. While such redundancy may serve as a coping mechanism to buy

processing time or maintain flow, it can disrupt message clarity, reduce communicative efficiency, and even lead to listener fatigue or confusion. These challenges reflect the difficulty of sustaining accuracy and precision in real-time interpreting tasks. To mitigate these issues, interpreter training should emphasize active listening, real-time decision-making, and the development of concise, fluent expression that prioritizes essential content over unnecessary elaboration.

4.4. 4. Ambiguity:

Semantically, ambiguity refers to the multiple interpretations a sentence can have, often due to a term or phrase having more than one meaning. Crystal (2020) discussed how words may carry multiple 'linguistic meanings' when taken out of context, as seen in the example: "She handed him her card." Without additional context, the term "card" could imply different interpretations, such as a business card, greeting card, or identification card, depending on the reader's or listener's perspective. However, once a term's use aligns with a specific context, ambiguity is resolved (Yule, 2016; Crystal, 2020; Nicholson, 1987).

In this study, the concept of ambiguity is expanded beyond its conventional scope. It encompasses not only sentences that can be interpreted in multiple ways but also those that are vague, confusing, or convey intricate sense. Errors in this category constitute 8.6% of the total errors (70 instances), ranking fourth in frequency. Ambiguity often results from unclear references, inadequate contextual details, omissions, redundancy, complex sentence structures, or proficiency gaps in one or both languages.

The following are illustrative examples (ambiguous sentences and their clear versions):

4.1. *"but what is related to that is not concerned with this." → "but the literary, religious, and human knowledge are out of the scope of this study."

4.2. *"and what is the use of that man should close the door of his house..." → "and what is the use of that man who closes the door of his house?"

4.3. *"and upgraded learning in human civilization." → "and (he) devoted science for the sake of human civilization."

4.4. *"These principles kept still for the Arab scientists." → "These principles remained dominant among the Arab scientists."

4.5. *"The researchers had left a lot of mathematics and numbers although the history of science is shortage." → (The meaning is unclear, and a precise correction is demanding.)

Errors in this category are particularly problematic as they distort the intended meaning, often leading to significant miscommunication. Time pressures, inadequate language proficiency, and the rapid pace of the speaker contribute to unclear or ambiguous sentences. These issues hinder students' ability to process and convey information accurately, resulting in fragmented and incorrect interpretations. This could undermine effective communication and hinder clear comprehension of the intended message.

Ambiguity errors obstruct clear communication by producing vague or confusing interpretations, often causing listeners to misinterpret the speaker's intent. In real-world contexts, especially in legal, diplomatic, or academic settings, such imprecision can lead to misunderstandings or misinformation. These errors typically result from unclear references, convoluted structures, or insufficient context processing, underscoring the need for interpreters to develop clarity-focused reformulation strategies under time constraints.

4.5. 5. Foreign Terminology:

Foreign terminology refers to the adoption of unnatural, inappropriate, or unrelated words and phrases from a foreign language, especially when precise terminology is critical for accurate interpretation. Errors in this category rank fifth in frequency, constituting 8.5% of the total errors (69 instances). The improper use of foreign terminology often arises from students' reliance on literal translations or their attempts to employ terms they assume to be accurate without fully grasping their nuanced meanings. The following are illustrative examples (foreign terminologies followed by their corrections):

5.1. "but 'Dr Yano' sets us a grealing example." → "a great live example."

5.2. "which the agencies of news have taken." → "which was broadcasted by news agencies."

5.3. "They used to cross all the difficulties without having anything to take them except animals." → "They used to cover thousands of miles even without means of transportation except their feet."

5.4. "The Greek civilization could not have been come as a sudden." → "The Greek civilization could not have risen all of a sudden."

5.5. "which may narrow this gap which make a distance between nations." → "which may narrow this gap that distances nations."

Foreign terminology errors often disrupt the natural flow of communication, compromising the clarity and precision of the conveyed message. They can be attributed to insufficient proficiency in specialized language, overreliance on literal translation, and a misconception of contextual cues, resulting in inaccuracies that distort meaning.

In professional interpretation, the adoption of inappropriate, unnatural, or unrelated foreign words can disrupt message clarity, especially when accurate terminology is crucial. Overreliance on untranslated terms, due to insufficient lexical knowledge or pressure, may alienate listeners, reduce credibility, and obscure intended meaning, particularly in technical or diplomatic contexts where interpreters must convey precise terms, not approximate or borrowed substitutes.

4.6. 6. Misunderstanding of the Original Text:

Misunderstanding of the original text refers to errors stemming from the interpreter's inability to comprehend the source material accurately. This category of errors, representing 8.4% of the total (68 instances), ranks sixth in frequency. It highlights apparent weakness in the students' command of specialized English, leading to noticeable distortion of the intended message, neglecting vital details, or including irrelevant and extraneous information.

The following are illustrative examples (misunderstood texts followed by their corrections):

6.1. *"The Greek knowledge was the start, the beginning and the end of the civilization." → "The Greek era was the starting point of civilization."

6.2. *"The Arabs paid tribute to Aristotle and referred attribution to his as he" → "The Arabs have objectively recognized Aristotle's virtuous deeds."

6.3. *"and the Islam was becoming known there with the expansion of the Islamic empire." → "and the Islamic civilization grew dominant alongside the expansion of the Islamic empire."

6.4. *"and that the Arabs were opposite to them (Romans) as they learned that and performed it properly." → "Unlike the Romans, the Arabs preserved and enriched previous knowledge systems."

6.5. *"but that was the capital of it like Damascus" → "Baghdad was its capital, spreading knowledge to Damascus, Cairo, and beyond."

Misunderstanding the original text often stems from failing to grasp its linguistic, cultural, or contextual nuances. This can result from imperfect language proficiency, overreliance on assumptions, time constraints, or the complexity and unfamiliarity of the source material. Misinterpretation resulting from misunderstanding not only distorts the intended meaning and undermines communication but also emphasizes the vital role of contextual knowledge in achieving clarity.

Misunderstanding the source text leads to serious message distortion, often inserting irrelevant details or omitting critical ones. In real-world settings, such errors compromise the interpreter's role as a faithful conduit of meaning. They stem from insufficient lexical and contextual comprehension, especially of specialized or abstract content, emphasizing the need for deep subject knowledge and active listening skills to ensure accurate and coherent message transfer.

4.7. 7. Collocations:

Collocation, in linguistic theory, refers to the natural and conventional pairing of words or expressions. Lewis (2000) highlighted its importance in vocabulary acquisition, emphasizing the idea of "knowing a word by the company it keeps." Carter and McCarthy (1988) further explored its role in understanding language use, aligning with Firth's (1957) assertion that "you shall know a word by the company it keeps." This underscores the interdependence of lexical items and their context in shaping lexical associations and nuances.

However, in this study, collocation errors are identified as the use of word combinations or phrases that are unnatural or incompatible in the target language, even when appropriate alternatives exist. Collocation errors rank seventh in frequency among identified error types, with 66 instances accounting for 8.1% of the total errors. These challenges frequently emerge from defects in English

proficiency and the interplay of cultural and linguistic differences. Variations in linguistic, structural, and cultural norms between Arabic and English frequently result in literal translations that fail to adhere to the recognized collocational conventions.

The following are illustrative examples (collocation errors along with correct alternatives):

1. *"Just like a bee which is armed with honey." (loaded)
2. *"And algebraic traces." (equations)
3. *"During the hard fight which is thrown by Amal movement." (the brutal bombardment carried out by Amal movement)
4. *"When he recruits his energies and his knowledge." (devotes, capabilities)
5. *"And a very expensive life." (luxurious)

Collocation errors in interpretation can lead to unnatural, awkward phrasing that disrupts clarity and coherence, making the output sound disjointed or inauthentic. These mistakes often stem from L1 interference, overreliance on direct translation, or limited exposure to authentic English usage. Such errors not only distract listeners and obscure meaning but can also undermine the interpreter's credibility, particularly in formal or technical settings. Mastery of native-like word combinations is therefore crucial for achieving fluency, clarity, and professionalism in high-stakes interpreting contexts.

4.8. 8. Style / Register:

Style and register pertain to the suitable tone, structure, and manner of communication, whether in speech or writing, ensuring alignment with the context and subject matter. Errors in this domain arise when the language used is stylistically incongruous, inconsistent, or mismatched with the intended context or topic. Style-related errors rank eighth among the identified types, comprising 57 instances – 7% of the total errors. Major reasons for such issues might include lack of familiarity with refined writing techniques, gaps in English proficiency, and exam-related pressure.

The following examples illustrate common style errors followed by revised versions:

- 8.1. *"The Arabs talked about their names a lot and" → "Their names were always mentioned among Arabs."
- 8.2. *"who has been oppressed by circumstances, and racist attacked him." → "who has been oppressed by circumstances and attacked by racists."
- 8.3. *"This is an article which is title is a greeting to this man." → "This is an article entitled 'a greeting to this man'."
- 8.4. *"Regardless to what their writings have been specified in being comprehensive and clear." → "Regardless of what specifically makes their writings comprehensive and clear."
- 8.5. *"In addition to what their works were known of clear and comprehensive." → "Besides what characterized their books as clear, easy, and comprehensive."

Consistency, appropriateness, and fluency are essential for effective interpretation, yet errors in style or register can lead to awkward, disjointed sentences that fail to capture the intended tone or meaning. Such errors often indicate a gap in linguistic proficiency and the ability to produce polished, contextually suitable communication. Inappropriate shifts, such as using overly informal, literal, or emotionally misaligned expressions, can compromise the professionalism and diplomatic intent of the original message, particularly in formal, academic, or political contexts where tonal accuracy is crucial. To maintain the speaker's credibility and intent, interpreters must cultivate a strong awareness of situational context and audience expectations.

4.9. 9. Wrong Derivation / Word Malformation:

Errors in wrong derivation or word malformation involve the use of inappropriate or incorrectly formed words, resulting in inaccurate or unclear expressions. These errors overlap with issues in 'word choice,' as both stem from vocabulary and structural inaccuracies. While generally minor and often self-correctable, they contribute to vague or disorganized communication. These errors accounted for 50 instances, representing 6.1% of total errors and ranking ninth in frequency. The primary causes may include time constraints, insufficient vocabulary mastery, and performance-related factors, as such errors commonly arise in high-pressure interpreting contexts.

The following are explanatory examples followed by corrections:

1. "This human physician performs a bright light." → (forms)
2. "and because the imperialism inherits, and the discrimination of the United States to its allies can anticipate in forming a picture" → "and because of imperialistic heritage, and the prejudice of the United States toward its allies may participate in forming a picture"
3. "Chemistry and Geology and their applying in engineering, veterinarian and" → "Chemistry and Geology and their applications in engineering and veterinary medicine."
4. "because of the destroy of the molds and" → (destruction)
5. "and racism lobbed against him." → (racists)

Though not as severe as some other error types, derivational errors can still obscure meaning and disrupt the flow of ideas, leading to unclear or awkward expressions. Such mistakes as using "Unpossible" instead of "impossible" or "respectedness" instead of "respect" reflect gaps in vocabulary mastery and morphological awareness. In formal or technical discourse, parallel incorrect word formations can confuse listeners, diminish the interpreter's credibility, and appear unprofessional. Mastery of common derivational patterns and functional word forms is therefore essential for achieving clarity, precision, and professionalism in real-time interpretation.

4.10.10. Literal Translation:

Literal translation refers to the practice of rendering texts word for word, adhering strictly to the surface meaning of words without considering the idiomatic, cultural, pragmatic, or contextual nuances of the target language. This style often results in texts that are awkward, unnatural, or even nonsensical in the target language.

The relatively low occurrence of literal translation errors – 36 instances, representing 4.4% of the total and ranking tenth overall – suggests increasing student awareness of the importance of context and idiomatic expressions in translation. These errors might be due to limited exposure to effective translation techniques, insufficient training in translation theory, and the inability to interpret meanings beyond the literal level. They reflect a flaw in linguistic and cultural fluency, resulting in unnatural and disjointed texts.

Below are illustrative examples followed by more accurate translations:

- 10.1. "Islam encourages science and encourages to look at the earth and the sky." → (and encourages the contemplation of natural phenomena, such as the earth and the sky).
- 10.2. "Many scientist historians believe that" → (historians of science)
- 10.3. "Some of them on the level of Galileo." → (can be on par with Galileo)
- 10.4. "but literary and religious information is far from the borders of this book." → (knowledge is beyond the scope of)
- 10.5. "Humanity walked in the walk of civilization." → (took its way towards)

Although the frequency of literal translation errors has decreased, they remain a significant challenge, revealing students' ongoing struggles with idiomatic expressions, syntactic structures, and cultural or contextual nuances. These errors occur when interpreters translate word-for-word without adjusting to the target language's natural idiomatic and syntactic patterns, often resulting in awkward, unclear, or incorrect phrasing. Such mistakes can disrupt communication flow and confuse listeners, particularly in professional or diplomatic contexts. They typically stem from limited exposure to authentic language use and a tendency to prioritize literal accuracy over meaning. To address this, interpreter training should focus on developing idiomatic fluency and encouraging context-sensitive rephrasing rather than direct translation.

4.11.11. Word Order:

Word order refers to the arrangement of words in a sentence to ensure natural and fluent expression in English. Errors in word order frequently stem from syntactic differences between English and Arabic. Influenced by the relatively flexible sentence structures and dual word order patterns (SVO and VSO) in their native language, Arabic speakers often produce incoherent or non-fluent English sentences. Such errors, totaling 31 instances (3.8% and ranking eleventh in frequency), highlight the misapplication of first-language syntactic rules. Time pressure during exams further prevents students

from revising their drafts, resulting in sentences that, while grammatically tolerable, often diverge from natural English syntax.

Below are examples of common errors and their corrected versions:

11.1. "Herodotus was fair to these civilizations, who was called the father of history." → (Herodotus, who was called the father of history, was fair to these civilizations.)

11.2. "then the knowledge of academic" → (the academic knowledge)

11.3. "The massacres that our enemies made and their friends." → (The massacres carried out by our enemies and their allies.)

11.4. "Arabs transferred to us the system of numbering." → (Arabs transmitted the numbering system to us.)

11.5. "And the applications of them in medicine." → (their applications)

Although word order errors are less frequent than other types, they present a noteworthy challenge for students, disrupting logical flow, causing confusing phrasing, and potential miscommunication. A key factor is language transfer (cross-linguistic influence), particularly the influence of Arabic syntactic structures on English (White, 2003). For instance, Arabic speakers often apply the VSO (verb-subject-object) order to English's SVO (subject-verb-object) structure. Additionally, in Arabic, descriptors and classifiers follow the nouns they modify, unlike English, where they precede them. The use of pauses to segment Arabic sentences further complicates interpretation, as time constraints hinder effective restructuring into coherent English syntax, resulting in disjointed or unnatural phrasing. For instance, the Arabic sentence:

اغفلاً تماماً/البابلية والمصرية القديمة /ومنهم من أغفل الحضارتين

is misinterpreted as: "Some of them have disregarded the two civilizations / the old Egyptian and the Babylonian (civilization) / a complete disregard (completely)." Such pauses, natural in Arabic, often lead to syntactically awkward English interpretations.

Word order errors disrupt sentence clarity and logical flow, undermining key elements that are crucial in real-time interpretation. Such mistakes often result from syntactic interference from Arabic or the pressure to process and render speech rapidly. Misordered sentences can confuse listeners, distort meaning, or weaken rhetorical impact, particularly in formal or technical contexts. Interpreter training should emphasize contrastive syntax practice and reformulation strategies to help students adopt English sentence structures and maintain coherence under time constraints.

4.12.12. Distortion of the Message due to the Difference in Structures between L1 and L2:

Barr and Keysar (2022) explore how listeners use common ground and contextual information to infer meaning and resolve ambiguity in real-time language processing. In consecutive translation, interpreters often encounter ambiguities and comprehension challenges. In this mode, speakers segment their discourse into simple units, which interpreters render immediately. While these individual segments may be meaningful, they often lack cohesion within the original sentence structure and broader context due to structural differences between English and Arabic. These difficulties are further compounded by the speaker's inconsistent pacing, unpredictable pauses, or inappropriate pause lengths. Listeners typically expect coherent messages within their immediate context, interpreting them based on available information and logical consistency. Errors in this category, ranking twelfth and final, total 30 instances (3.7%). The following are typical examples (the slanting lines in the Arabic sentences indicate the speaker's pauses):

12.1. *I wondered about the reason that makes the physician Canadian named "Kriss Yano".

12.2. *There were connections between the Greeks and the old Egyptians in addition to wars.

12.3. *What does personal happiness mean? And individual peace?

12.4. *have contributed in shaping a picture undesirable to the West to many sectors of Arab nations.

12.5. *Some of them overlooked the civilizations of old Egypt and the Babylonian completely.

These examples demonstrate that structural differences between English and Arabic often lead to distortions in interpretation, as students struggle to navigate the distinct syntactic and discourse patterns of each language. While they may understand the rules, applying them accurately in real-time, especially under pressure, such as during recordings, remains challenging. These distortions, often caused by transferring Arabic structures into English, result in awkward phrasing, reduced clarity, and potential loss of meaning. To address this, interpreter training should incorporate targeted contrastive

analysis and practice to help students produce natural, context-appropriate output under real-world conditions.

5. Recommendations

Based on the findings of this study, the following recommendations are proposed to enhance interpreter training programs, with a focus on minimizing lexical errors and promoting professional interpreting competence:

- **Lexical Precision and Vocabulary Development** (Nord, 2018). To reduce word choice, collocation, and foreign terminology errors, interpreter training should prioritize structured vocabulary development and domain-specific terminology acquisition. Regular exposure to specialized texts, such as legal, medical, or scientific materials, combined with targeted lexical retrieval exercises under time constraints, can strengthen interpreters' fluency, accuracy, and contextual appropriateness.
- **Error Awareness and Reformulation Skills.** Ambiguity, literal translation, and redundancy errors highlight the need for explicit training in reformulation strategies. Interpreters must be trained to rephrase content idiomatically, prioritize essential information, and maintain semantic clarity. Emphasis on contrastive language analysis, especially between English and Arabic, can support the development of natural target-language output and reduce message distortion.
- **Cognitive Load Management and Coping Strategies** (Koskinen, 2017). Omission and distortion-related errors underscore the importance of equipping interpreters with robust cognitive management strategies. This includes the use of memory-enhancement techniques, effective pacing, notetaking training, and simulated practice under realistic time constraints to build resilience and improve processing efficiency during high-pressure interpreting tasks.
- **Fluency, Grammar, and Structural Mastery** (Pöchhacker, 2016). Errors involving wrong derivation, word malformation, and word order indicate the necessity for focused instruction on English morphological patterns and syntactic structures. Interpreter curricula should incorporate contrastive grammar exercises and real-time reformulation tasks that enhance syntactic flexibility and structural accuracy in target language production.
- **Register Appropriateness and Stylistic Sensitivity.** Style and register errors reflect a need for greater sensitivity to audience expectations, situational formality, and speaker intent. Training modules should include exercises in tone adaptation, register analysis, and discourse-level coherence to ensure interpreters can preserve both meaning and intent across diverse communicative contexts.
- **Cultural and Collocational Competence** (Aldrich, 2015). To address cultural misinterpretations and unnatural lexical combinations, interpreter training should incorporate modules on cultural literacy, idiomatic usage, and collocational awareness. Cross-cultural workshops and experiential learning opportunities can deepen understanding and prevent culturally inappropriate renditions.
- **Stress Regulation and Performance Under Pressure** (Kaya, 2020). Given the cognitive demands of interpreting, especially under time constraints, programs should embed training in stress management techniques, such as mindfulness and relaxation strategies, to enhance cognitive control and decision-making during live interpretation.
- **Integration of Technology and Feedback Mechanisms.** Incorporating digital tools (e.g., transcription software, speech recognition apps) can improve notetaking and message reconstruction. Additionally, the use of learner error corpus and structured feedback sessions can help trainees identify recurring patterns, keep track, and implement corrective strategies more effectively.
- **Practice-Based and Collaborative Learning** (Hattie & Timperley, 2007). Exposure to real-world interpreting contexts, coupled with peer collaboration and professional mentorship, fosters adaptability and skill refinement. Simulated interpretations with immediate feedback help bridge the gap between theoretical knowledge and practical performance.

By embedding these evidence-based strategies into interpreter education, training programs can systematically address key lexical challenges, thereby enhancing the overall quality, fluency, and reliability of professional interpreting performances.

6. Limitations and Further Research

This study is limited by its specific sample and reliance on final exam data, which may not fully represent real-world interpreting performance or account for external factors. The sole use of error analysis may also overlook cognitive and emotional influences. Future research should involve more diverse samples, explore various interpreting modes, and assess the impact of targeted training strategies such as reformulation techniques, digital tools, and stress management. Investigating directionality-specific challenges and their role in lexical error reduction is also recommended to enhance interpreter training and pedagogical effectiveness.

7. Conclusions

Both simultaneous and consecutive interpretation present distinct yet interconnected challenges, primarily stemming from the structural, grammatical, and cultural differences between English and Arabic. Simultaneous interpretation places immense cognitive demands on interpreters, requiring rapid processing, real-time decision-making, and the ability to retain large chunks of information before rendering them in the target language. On the other hand, consecutive interpretation, while allowing for more reflection, relies heavily on memory retention, effective notetaking, and the skill of segmenting speech into meaningful units. However, the segmentation process often results in sentences that fail to align with the overall structure and coherence of the original passage. That is a direct consequence of the fundamental differences in how English and Arabic organize information, employ word order, and utilize modifiers, tenses, and complex sentence structures.

The challenges interpreters face are intensified by external factors like the speaker's pace, rhythm, and pausing patterns, which can hinder the production of smooth and accurate translations. A key difficulty arises from the contrast between Arabic's flexible word order (SVO and VSO) and English's linear (SVO) structure, often resulting in translations that lose cohesion or misrepresent the original meaning. Additional complexity comes from sentence structure, reliance on contextual cues, and lexical ambiguities, especially when words carry multiple meanings or culturally specific connotations.

The conclusions of this study could be summarized as follows:

1. Mode-Specific Demands Simultaneous and consecutive interpreting impose distinct cognitive loads. Simultaneous interpretation requires real-time processing and rapid decision-making, while consecutive interpretation relies on memory retention and effective notetaking. Both modes demand advanced linguistic proficiency, cultural awareness, and strategic thinking to ensure accuracy and coherence.

2. Nature and Sources of Errors Common errors include lexical inaccuracies, omissions, redundancy, and ambiguity. These are primarily performance-related, often triggered by time pressure, complex input, and rapid delivery, rather than by inadequate language knowledge.

3. Lexical and Structural Challenges Frequent mistakes such as incorrect word choices, omissions, and literal translations often stem from structural differences between English and Arabic, particularly in syntax and word order. These issues can distort meaning and reduce communicative effectiveness.

4. Cognitive and Contextual Pressures Stressful conditions, especially in high-density or high-stakes interpreting, impair memory and decision-making, increasing the likelihood of omissions and lexical errors. Interpreters must learn to manage cognitive load and make effective decisions under pressure.

5. Specialized Knowledge Gaps Accurate interpretation in technical, legal, or scientific contexts hinges on domain-specific terminology. A lack of subject-matter expertise leads to vague or erroneous renditions, highlighting the need for enhanced preparation in specialized fields.

6. Error Awareness and Development Performance errors can be mitigated through reflective practice and feedback. Post-task analysis helps interpreters identify patterns, refine techniques, and reduce error rates over time.

7. Overarching Conclusion The findings show that lexical errors in interpretation stem from a multifaceted interaction of linguistic, cognitive, and contextual variables. Although linguistic competence is essential, it must be supported by training in terminology, cognitive load management, directionality, and real-time processing. The error taxonomy and analysis framework developed in this study provide practical tools for interpreter training and future research. Moreover, the evidence

highlights directionality as a key challenge with significant implications for curriculum design and professional development.

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Appendixes

- Appendix 1 -

- Test Papers -

الامتحان النهائي " ٥٧٠ "

570/ Final Exam, January

1987 -

* بسم الله الرحمن الرحيم *

هذا مقال بعنوان تحية لهذا الرجل بقلم د. نبيل الشريف سأقرأه بالسرعة العادية مع

توقف .

تساءلت وأنا أقرأ تفاصيل الخبر الذي تناقلته وكالات الأنباء، والذي نشرته الدستور أول أمس عن الحياة في مخيم شاتيللا أثناء القصف الهجمي الذي يتعرض له من قبل حركة أمل، تساءلت عن السبب الذي يجعل هذا الطبيب الكندي المسمى " كرس يانور " يصر على الاستمرار في عمله في مستشفى المخيم الواقع تحت الأرض وفي ظروف صعبة وخطيره للغاية وفي حقيقة الأمر فقد أتاحت لي الظروف مقابلة هذا الطبيب الانساني

قبل سنوات في الولايات المتحدة وسمعت به يتحدث في محاضرة بحماس منقطع مع النظر عن تجربته الانسانية في معالجة المصابين اثناء وبعد مذابح صبرا وشاتيللا الأولى التي ارتكبتها الاسرائيليون وعملاؤهم .

وكان ما قاله الدكتور " يانور " انه يجد معنىً لحياته عندما يجند طاقاته وعلمه لمساعدة الجرحى والمصابين الذين يقعون ضحايا للعنصرية والهمجية ان هذا الطبيب الانسان القادم من كندا يقدم نموذجاً فريداً للبذل والعطاء في سبيل المبدأ حتى وان أدى ذلك الى خوض المعاب والاقتراب الشديد من بؤر الخطر وهو يلخص بذلك انبل ما في البشرية من مُثل واهداف سامية . ويزداد اعجابنا بهذا النموذج النبيل للانسان عندما نعلم ان أقران " كرس يانور " من اطباء في كندا والولايات المتحدة يعيشون حياة مرفهة بل غاية في الرفاهية بسبب ارتفاع دخلهم وبسبب المزايا العديدة التي يحملون عليها فلو أن هذا الطبيب الكندي اراد لنفسه حياة مادية غاية في الرقي والهدوء ، لما اعجزه ذلك .

ولكن " يانـو " يضرب لنا المثل الحي لقطاع من الناس في طول هذا العالم وعرفسه لا تقاس لديهم السعادة بالدولارات ولا بالرفاه الشخصي فما معنى السعادة الشخصية والأمن الفردي عندما تـداس قيمة إنسانٍ اخرفي جزء، آخر، ولوبعيد من هذه الارض التي نعيش عليها جميعا وما معنى ان يفلق الانسان باب بيته لينام في امان ، عندما يعلم ان غيره من بني البشر لا يملكون هذا الترف إذ أن امنهم مصادر وحياتهم مهددة ، لقد أدرك الدكتور " يانـو " هذه المعاني الخالدة للحياة فأبى على نفسه ان يتمتع بالهدوء والأمن الشخصي وهو يدرك أن باستطاعته أن يخفف من ألم مصاب او ينقذ حياة انسان ظلمته الظروف وتكالب عليه العنصريون واذا كانت مهنة الطب هي مهنة الرحمة وقمة البذل الانساني فان ما يقدمه " يانـو " للجرحى والمصابين في مستشفى " شاتـيلا " هو تجسيد خالـد لرسالة الطب وتعبير بليغ عن الالتزام بمبادئ، هذه المهنة مهما كانت العواقب ومهما اشتدت الصعوبات . ان هذا الطبيب الانسان يشكل نقطة مضيئة ونموذجا رائدا للانسان الغربي، ولأن الأثر الاستعماري وانحياز الولايات المتحدة وبعض دول المعسكر الغربي لاسرائيل قد أسهم في تشكيل صورة غير محببه للغرب لدى قطاعات كبيرة من الشعوب العربية وشعوب العالم الثالث ، فان المواقف الانسانية التي يقدمها افراد غربيون مخلصون مثل " كرس يانـو " من شأنها تضييق النجوة التي تفصل بين الشعوب وتعمل على اقامة جسور الحوار والتفاهم بين مختلف الشعوب على قاعدة الود والاحترام المتبادل . انتهت المقالة وقد نشرت في جريدة الدستور بتاريخ ١٩٨٦/١٢/٩ م.

Final Exam 570
 كيمياء ٥٧٠

د. عبد الحليم شمس: تاريخ العلم ودور العلماء العرب

في عصره

دار المعارف بمصر

١٩٨٠

١

التراث العلمي العربي

يجل بنا ، قبل ان نعرض للتراث العلمي العربي ، ان نشير ، الى اتنا نمش بالعلم هنا ، كل ما يتصل بالعلوم الطبيعية الاساسية من معارف ، من رياضيات وطبعية وكيمياء وذلك وحيوان ونبات وجيولوجيا ، وتطبيقاتها في الطب والزراعة والهندسة والميدلة والبيطرة وما اليها . لما المارن الابية والتاريخية والدينية ، فانها خارجة عن نطاق هذا الكتاب . كما اتنا نمش بالمرب كل اولك الذين ستمهم الابروالمروية العربية والوطن العربي ، والذي امتد يوما تيباً بين مشارف الصين شرقا ، ومشارف فرنسا غربا ، وتمتد بالماء النرب ، كل من نشأ منهم في هذه البلاد التي دانت بالاسلام وتكلم اهلها اللغة العربية ، وكتب والف في هذه المعارف باللغة العربية .

اما التراث الذي نمشيه ، فهو ما خلخته اجيال من العلماء العرب ، من الوف الكتب والرسائل والمؤلفات ، وما يزال كثير منها تزدان به مكتبات العالم في الشرق والغرب على السواء ، وما تحتوي هذه الكتب من آراء ونظريات علمية ، ليس الى حصرها من سبيل ، وانها لتساعد على ان العلماء العرب لم يكتفوا بنقل التراث العلمي الاغريقي الى العربية ، ولكنهم انشأوا اليه وزادوا عليه . فمسلماً عما تميزت به كتاباتهم من السهولة والوضوح والاحاطة والشمول ، الى جانب ابتكاراتهم العلمية الاسيلة التي نادوا بها ، ولم ينقلوها عن غيرهم ، ومن اسف ان كثيرا من ابتكاراتهم نسبت الى غيرهم .

ولمنا ان نعرض في ايجاز كذلك لحقيقة هذا التراث . او على حد التعبير الحديث ، من اين لهم هذا .. ما الذي ورثوه هم عن غيرهم ؟

ومن ورثوه ، وما الذي انشأوه هم ومن انشأوه ، وما الذي ورثوه لغيرهم .. فمن المعروف ان الحضارة الاغريقية ، ورثت الحضارات المصرية والسورية والبابلية والاشورية والينيقية ، وكان الاغريق قوماً حكيمين ، نلسفوا العلم وسافروا له للتعليم والفروض ، ومن حسن حظ العلم الاغريقي والماء الاغريق ان بقيت مؤلفاتهم وكتبهم محفوظة حتى الان ، وان تلك اللاتينية لغة العلوم على مدى قرون واجيال . على حين مصفت يد الزمن بلشت اخرى كان لأهلها فضل اي فضل على العلم ، وانها لا تكاد تعرف الا في المتاحق ولدى ثلة من المتخصصين .

وكذلك يعتبر كثير من مؤرخي العلم ان عصر الاغريق كان نقطة الابتداء او مرحلة الانطلاق ، حيث ازدهى هذا العصر بامام كان لهم شأن اي شأن وما زال صوتهم يذوي في الخانتين عبر القرون ، منذ ينسج بثبات من الستين تيل الميلاد حتى الوقت الحاضر ، فما زالت اساء طاليس وايقراط وينيافوروس وسقراط وانلاطوس ورسطو ومن اليهم من علماء الاغريق ترن في آذان الدهر ، دالة على فضلهم على العلم وعلى الحضارة الانسانية ... كما كانوا هم اول من اشاء الشملة ، وظلت الايام تنقلها من يد الى اخرى حتى وصلت الى ايدي علماء العصر الحاضر ، وانها لتزداد توجهاً واشتمالاً كما يزداد نورها قوة وسلطوما .

على ان الباحث المتصف لا يمكن ان يغفل امر العنيات القديمة التي سبقت العصر الاغريقي وتحدث عليه في التاريخ ، اذ لا يمكن ان يكون العنية الاغريقية قد نشأت فجأة ، ويمزج من العنيات الاخرى من بابلية واشورية ومصرية قديمة ، وقد كانت بين الاغريق والمصريين للتصاه مالات وتجارات وحروب ، وقد ترك المصريون من الاثار والبيرديات مايدل على تفوقهم في كثير من العلوم والفنون من هندسة وتخطيط وتعمير وذلك . كذلك ترك البابليين من الاثار والقوالب مايدل على امامهم بكثير من المعارف في الرياضيات والفك ونظرية الامداد والمعادلات الجبرية والهندسية ، ومع ان تاريخ العلم عند البابليين تانص لتنتت القوالب وشياع كثير منها ، فمسلماً من ان الذين درسوه اقلهم من الغربيين ، ولا تخلو كتاباتهم من تعبير ضد الحضارات السابقة . ومشم من اغفل الحضاراتين

الذي استعمله العرب للدلالة على هذا العلم مستملا حتى الآن ، وكانت العرب اول من اطلعه يقول كاجورى ان المنل ليدهش عندما يرى ما علمه العرب في الجبر . فقد حلوا معادلات من الدرجة الثانية بل من توى اعلى . واستعملوا الرموز في المعادلات ووضوا أسس الهندسة التحليلية ، ومدوا لاكتشاف اللوغاريتمات والتفاضل والتكامل وعرفوا المتواليات العددية والهندسية ولهم بحوث في النسبة العددية والهندسية والتأليفية (١) .

ويقول المحرم الدكتور مشرفة «صحيح ان حل المعادلات من الدرجة الثانية كان معروفا لدى الاغريق وعند الهنود ، ولا شك ان الخوارزمي قد اطلع على ما لدى الهنود والاغريق من علم رياضي ، ولكما لم نعلم على كتاب واحد يشبه كتاب الخوارزمي ، ويقول انه يميل الى الظن بأنه لم يكن قبل الخوارزمي من علم يسمى علم الجبر ، وتتجلى معقبة الخوارزمي في انه خلق علما من معلومات مشتتة وغير متماصة ، كما خلق نيوتن علم الديناميكا من معلومات مشتتة عرنت قبله . لتد كان ينبغي ان ينتقل حساب الهنود ، وهندسة الاغريق الى معقري كالخوارزمي ، الذي وضع علم الجبر وعلمه للناس اجمعين . .

كذلك يرجع الفضل في وضع علم حساب المثلثات بطريقة منظمة الى بعض العلماء العرب ، وينفصلهم اعتبر هذا العلم عربيا كما اعتبرت الهندسة افرقية . اما تلك فقد كان له مريدون كثيرون من العلماء العرب . وضوا ازياجاً وعلوا ارسادا واناموا المراد وسجلوا رسدات على جانب عظيم من الاهمية ، تاسوا بحيط الارض ، وقصدوا ايجاد بعض النجوم والكواكب وتالوا باستدارة الارض ، وحسبوا طول السنة الشمسية ، وحققوا مواضع كثير من النجوم ورسدوا الامتدالين وكثيرا عن البقع الشمسية ، وعن الكسوف والخسوف . وانتقدوا كتاب المجسطي ،

(١) تراث العرب العلمي للاستاذ تدري طوقان

في هذا الجو العلمي المارم ، نشأ عدد من العلماء العرب ، يزدهى بهم العلم في كل عصر وان ، شاركوا مشاركة عمالة في بناء النهضة العلمية ، وخطوا بالانسانية خطوات نسيحة في سبيل الرقي والتقدم ، نستطيع ان نعد منهم عشرات بل مئات يمكن ان يفتخروا الى علماء العصر الحاضر ، ومنهم من يوسع مع جاليليو ويكوتن ونيوتن وديكارث في كفة ، ومنهم من يرفع هؤلاء جيمما . وحتى قيل بحق انه لولا اعمال ابن الهيثم والبيروني وابن سينا والخوارزمي والكندي والبيروجاني والطوسي وغيرهم لانظر علماء النهضة الاوروبية ان يبدأوا من حيث بدأ هؤلاء ولتأخر سير المنتبة عدة قرون .

ويعتبر المتصفون من المؤرخين بان الرومان لم يحسنوا القيام على التراث الاغريقي ، وان العرب كانوا على خلاف ذلك ، فقد حفظوه واقتروه ، ولم يتقوا عند هذا الحد بل تمدوا الى ترقية ما اخذوه وتطبيقه ، بانلبن الجهد في انبائه حتى سلوه للمعصر الحديث . ويتبول بمضوم «لا نبالغ اذا قلنا ان اوربا حديثة للعرب بختمهم العلمية ، تلك الخدمة التي كانت الملل الاكبر في النهضة الاوروبية في القرنين الثالث عشر والرابع عشر ، لتد كانت الحضارة العلمية الاسلجية بمثابة حلقة الاتصال بين الحضارة الاغريقية والحضارة الحديثة ، ونحن لا نستطيع ان نلم في هذا الحديث بالانجازات الهائلة التي حققها العلماء العرب في ميادين العلوم والطبيعة ، ولعلنا نذكر ان العرب نقلوا لنا نظام الترتيم من الهند ، فقد وجدوا انه ليس من حساب الجبل الذي كانوا يستعملونه ، اختاروا سلسلتي عرنت احدهما باسم الارقام الهندية (١ ، ٢ ، ٣ ، ٤ ، ٥ ، ٦ ، ٧ ، ٨ ، ٩ ، ١٠ ، ١١ ، ١٢ ، ١٣ ، ١٤ ، ١٥ ، ١٦ ، ١٧ ، ١٨ ، ١٩ ، ٢٠ ، ٢١ ، ٢٢ ، ٢٣ ، ٢٤ ، ٢٥ ، ٢٦ ، ٢٧ ، ٢٨ ، ٢٩ ، ٣٠ ، ٣١ ، ٣٢ ، ٣٣ ، ٣٤ ، ٣٥ ، ٣٦ ، ٣٧ ، ٣٨ ، ٣٩ ، ٤٠ ، ٤١ ، ٤٢ ، ٤٣ ، ٤٤ ، ٤٥ ، ٤٦ ، ٤٧ ، ٤٨ ، ٤٩ ، ٥٠ ، ٥١ ، ٥٢ ، ٥٣ ، ٥٤ ، ٥٥ ، ٥٦ ، ٥٧ ، ٥٨ ، ٥٩ ، ٦٠ ، ٦١ ، ٦٢ ، ٦٣ ، ٦٤ ، ٦٥ ، ٦٦ ، ٦٧ ، ٦٨ ، ٦٩ ، ٧٠ ، ٧١ ، ٧٢ ، ٧٣ ، ٧٤ ، ٧٥ ، ٧٦ ، ٧٧ ، ٧٨ ، ٧٩ ، ٨٠ ، ٨١ ، ٨٢ ، ٨٣ ، ٨٤ ، ٨٥ ، ٨٦ ، ٨٧ ، ٨٨ ، ٨٩ ، ٩٠ ، ٩١ ، ٩٢ ، ٩٣ ، ٩٤ ، ٩٥ ، ٩٦ ، ٩٧ ، ٩٨ ، ٩٩ ، ١٠٠ ، ١٠١ ، ١٠٢ ، ١٠٣ ، ١٠٤ ، ١٠٥ ، ١٠٦ ، ١٠٧ ، ١٠٨ ، ١٠٩ ، ١١٠ ، ١١١ ، ١١٢ ، ١١٣ ، ١١٤ ، ١١٥ ، ١١٦ ، ١١٧ ، ١١٨ ، ١١٩ ، ١٢٠ ، ١٢١ ، ١٢٢ ، ١٢٣ ، ١٢٤ ، ١٢٥ ، ١٢٦ ، ١٢٧ ، ١٢٨ ، ١٢٩ ، ١٣٠ ، ١٣١ ، ١٣٢ ، ١٣٣ ، ١٣٤ ، ١٣٥ ، ١٣٦ ، ١٣٧ ، ١٣٨ ، ١٣٩ ، ١٤٠ ، ١٤١ ، ١٤٢ ، ١٤٣ ، ١٤٤ ، ١٤٥ ، ١٤٦ ، ١٤٧ ، ١٤٨ ، ١٤٩ ، ١٥٠ ، ١٥١ ، ١٥٢ ، ١٥٣ ، ١٥٤ ، ١٥٥ ، ١٥٦ ، ١٥٧ ، ١٥٨ ، ١٥٩ ، ١٦٠ ، ١٦١ ، ١٦٢ ، ١٦٣ ، ١٦٤ ، ١٦٥ ، ١٦٦ ، ١٦٧ ، ١٦٨ ، ١٦٩ ، ١٧٠ ، ١٧١ ، ١٧٢ ، ١٧٣ ، ١٧٤ ، ١٧٥ ، ١٧٦ ، ١٧٧ ، ١٧٨ ، ١٧٩ ، ١٨٠ ، ١٨١ ، ١٨٢ ، ١٨٣ ، ١٨٤ ، ١٨٥ ، ١٨٦ ، ١٨٧ ، ١٨٨ ، ١٨٩ ، ١٩٠ ، ١٩١ ، ١٩٢ ، ١٩٣ ، ١٩٤ ، ١٩٥ ، ١٩٦ ، ١٩٧ ، ١٩٨ ، ١٩٩ ، ٢٠٠ ، ٢٠١ ، ٢٠٢ ، ٢٠٣ ، ٢٠٤ ، ٢٠٥ ، ٢٠٦ ، ٢٠٧ ، ٢٠٨ ، ٢٠٩ ، ٢١٠ ، ٢١١ ، ٢١٢ ، ٢١٣ ، ٢١٤ ، ٢١٥ ، ٢١٦ ، ٢١٧ ، ٢١٨ ، ٢١٩ ، ٢٢٠ ، ٢٢١ ، ٢٢٢ ، ٢٢٣ ، ٢٢٤ ، ٢٢٥ 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Appendix 3

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The True End of Empire



The Suez crisis of 30 years ago was a colossal British blunder that changed the look of the world

ANTHONY SAMPSON

Every 10 years since 1956 the British people have looked back again at an extraordinary six-month period that marked the last fling of their imperial power. That was the time when Egyptian President Gamal Abdel Nasser nationalized the Suez Canal, when the British and French conspired with the Israelis to attack Egypt and when the two nations were finally humiliated and compelled to retreat in the face of American pressure. It happened 30 years ago this week.

For most Britons over 60, the Suez crisis remains the most traumatic political watershed. Suez broke up friendships, destroyed reputations and changed the look of the world. As a young journalist reporting that crisis, first in London then in Suez itself, I could never really understand how my government could make such a colossal mistake. I still cannot; but there are now more clues to the mystery.

Each 10-year anniversary reveals new details of the conspiracy that preceded the invasion of Egypt. This year particularly dramatic evidence emerges from the authorized biography of Sir Anthony Eden, the British prime minister who was more responsible than anyone for the ill-fated war.

Drugs and stimulants: Written by Conservative M.P. Robert Rhodes James, the book—"Anthony Eden"—is a disturbing account of a man who emerges, despite all the author's sympathy, as dangerously weak for the burden of his office. Eden, as he told his cabinet colleagues just before he resigned, had undergone serious abdominal surgery that left him with a "largely artificial inside," as he put it. Under the strain of the crisis he had to take more and more drugs and stimulants until his health gave out. Always temperamental, Eden oscillated between over-assertiveness and petulance. His then private secretary Evelyn Shuckburgh, who has just published his diaries, "The Descent to Suez," describes the prime minister as being like a child, a man with whom you could have a violent scene—and then "10 minutes later the whole thing is forgotten."

Eden's instability was worrying enough; but still more disturbing was the willingness of his cabinet to support his dangerous military plans. His successor, Harold Macmillan, then chancellor of the exchequer, was one of the most belligerent; even Lord Mountbatten, the first sea lord who later claimed that he was "dead against" the invasion from the start, turns out to have kept his doubts largely to himself.

To this day the Suez invasion stands out as a historic blunder that achieved almost the opposite of what was

intended. It is true that 11 years later Nasser's disastrous Six Day War against Israel appeared to justify some of Eden's belief that the Egyptian leader was a megalomaniac menace, and subsequent American interventions in the Middle East made the Anglo-French action look less uniquely rash. But for Britain the Suez crisis was nothing less than a self-destructive act that could never have succeeded. Far from keeping the canal open and protecting British oil interests, as Eden claimed it would, the invasion immediately caused the canal to be closed, and encouraged a new wave of Arab fury against Britain that probably hastened the formation of OPEC and the nationalization of Western oil concessions. What's more, President Eisenhower left little doubt that he could not and would not condone it, and without U.S. support it soon provoked a serious economic crisis and a rundown of Britain's currency reserves that forced a reversal of policy and strained relations with Washington to the limit.

How could a group of responsible politicians have so blithely encouraged such a rash and clumsy adventure? The explanation can be found only in the psychopathology of nations, particularly of ex-imperial nations like Britain and France that have always found it difficult to come to terms with the realities of dwindling military power and tightening economic constraints. For the British conservatives, Nasser's nationalization of the canal truly marked the retreat from empire. Granting independence to India and Pakistan nine years earlier had been achieved without any serious backlash. The decision to withdraw British troops, which Eden himself had pressed for in 1954, provoked an uproar from the diehards who saw the canal as the lifeline for British interests. Eden argued then that they could trust Nasser to keep the canal free. And so when Nasser turned against him, he was all the more bitter and chose the military option. But the military assessment of Britain's interests—and its abilities—contrasted sharply with economic realities. The idea that troops could indefinitely safeguard oil concessions in the midst of hostile nation-states was never really credible.

Economic imperatives: While the British in the 1950s still saw their interests in military terms, the commercial victors were the nations—led by West Germany and Japan—with no empires to confuse them, nations that invested in and traded with any country that accepted them, nations that never lost sight of their economic imperatives.

It still find it hard to comprehend how Eden and his cabinet could have made that extravagant blunder 30 years ago. Yet in the perspective of the 30 years before Suez, the question could be reversed: how did Britain succeed in getting rid of its empire so easily—much more peacefully than, say, France or even Holland? It was, after all, an extraordinary transition. A ruling class brought up in imperial grandeur, with a hierarchy of field marshals, viceroys and colonial governors, had to come to terms with a much more humble and much less romantic role as merely commercial competitors. That Britain made the adjustment without a major domestic revolt seemed a kind of miracle to liberals of the older generation.

In this perspective Suez may have been something of a blessing in disguise—a painful lesson, but a lesson that left no doubt about economic priorities. The Anglo-American relationship survived largely unscathed as Britain abandoned its imperial pretensions. And by the 1990s many Britons were beginning to feel that the tables were being turned, that it was Washington that needed the warning that economic or political problems in the Middle East are not necessarily solved by military adventures.

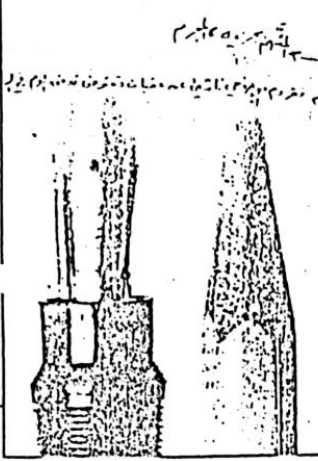
Anthony Sampson is the author of "The Changing Anatomy of Britain."

Appendix 4

570/Final Exam January 1987
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Medicine

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Fighting the Silent Attacker

Millions suffer from a heart ailment they do not know they have

The first clue is often the catastrophe itself: a fatal heart attack. But the events that set the stage for disaster, like those preceding an earthquake, have been occurring for years beneath the surface, painless and unnoticed. The culprit is silent ischemia, an intermittent interruption of blood flow to the heart, which kills tens of thousands of seemingly healthy Americans each year. Doctors estimate that the condition, undetected, exists in an additional 3 million to 4 million people known to have heart disease and further increases the likelihood they will suffer a heart attack.

Although silent ischemia was identified nearly two decades ago, the attention it received at last week's annual scientific meeting of the American Heart Association in Dallas reflected a growing awareness that it is a formidable medical problem. Says Cardiologist William Shell, of the University of California, Los Angeles: "It may be silent, but it can be deadly."

One study presented by researchers from the Johns Hopkins Medical Institutions appears to bear him out. The Hopkins team, led by Cardiologist Sidney Gottlieb, examined 103 heart-attack patients who seemed to be recovering without complications or pain and found that 30 were having ischemic episodes. One year later nine (30%) of these people had died from heart attacks. Of the 73 without silent ischemia, only eight (11%) had suffered fatal heart attacks. "If you have had a heart attack and you have ischemia," Gottlieb concluded, "you may have a three times greater risk of dying."

Ischemia occurs when coronary arteries partly clogged with fatty deposits of plaque suddenly contract in spasms or are blocked by a clot, depriving the heart muscle of blood and thus oxygen. While painful or "noisy" ischemia (angina) often results from physical exertions, like balancing a checkbook, can trigger silent ischemia. During these episodes, which typically last a few minutes but can go on for ten hours, large portions of heart muscle can be damaged. Yet in more than 75% of all cases, for still unknown reasons, the victim feels no pain.

Then how is silent ischemia diagnosed? Doctors can detect attacks by monitoring electrical signals from their patients' hearts during exercise stress tests; a sudden decrease in blood flow to the muscle changes the signal. The condition can then be confirmed by a Holter monitor, a portable electrocardiograph worn by the patient for at least 24 hours.

But many doctors will not yet order the test. "There is still a school of thought that believes, 'No pain, no worry,'" says Peter Cohn, chief of cardiology at the

State University of New York's Health Sciences Center at Stony Brook. He recommends annual testing only for people who are at risk because of diabetes, smoking, high cholesterol, high blood pressure or a family history of heart disease. Healthy people not at risk probably should not be concerned, he says. Men at risk should begin testing between the ages of 35 and 40; women, at 45.

Some doctors, after diagnosing ischemia, prescribe nitroglycerin, calcium blockers and other drugs that relax constricted arteries or slow the heart rate.

Shell favors nitroglycerin patches applied to his patients' skin. "We don't have proof that this lowers the risk of heart attack," he says, "but anecdotally, I can tell you that my patients are doing better." Others have used bypass surgery (which allows blood to circumvent clogged arteries) or balloon angioplasty (to widen arterial passageways) against the silent attacks.

Doctors at the conference stressed that detecting silent ischemia will not merely prevent a few thousand dramatic deaths. It will also uncover heart disease in many people who are unaware that they have it. The stress and Holter tests are costly (about \$200 each), according to Dr. Carl Pepine, a silent-ischemia expert from the University of Florida at Gainesville, but no more so than the toll ultimately taken by heart disease itself. Says he: "We're talking about the one disease that kills the most people in the country, many in middle age, when they are making their greatest contribution to society. That's expensive too." —By Joe Levine.

Reported by Christine Gorman/Dallas



Patient wearing Holter monitor
Catastrophe is often the first clue.

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- Appendix 5 -

الامتحان النهائي / ترجمة فورية ٥٧١ بتاريخ ١٩٨٧/١/٧م

571/ Final Exam.

* بسم الله الرحمن الرحيم *

اذاعة المملكة الاردنية الهاشمية من عمان .

ايها السيدات والسادة ، السلام عليكم ورحمة الله وبركاته . الى حضراتكم التسجيل الكامل للكلمة التي القاها جلالة الملك الحسين في مأدبة العشاء التي اقامها تكريما لجلالته الليلة الماضية فخامة الرئيس الهندي " جيانفي زيل اسنغ " .

* بسم الله الرحمن الرحيم *

فخامة الرئيس " جيانفي زيل اسنغ " السيدة الحاضرة " ايها السيدات والسادة انه لمن دواعي سروري البالغ وسعادتي الغامرة ان اكون معكم هذا المساء ، فهي حقا مناسبة متميزة لأنها تتيح لي فرصة التعبير عن شكري المخلص لكم على دعوتي لزيارة بلدكم العظيم التي تشكل بحد ذاتها مصدر تكريم لي شخصيا مثلما هي تكريما للمملكة الأردنية الهاشمية وهي ايضا مناسبة طيبة تسمح لي وللمملكة الأردنية المرافق للاعراب عن مشاعر التقدير والعرفان للحفاوة والرعاية التي احظتمونا بها منذ لحظة وصولنا لبلدكم المديق وهي كذلك مناسبة عزيزة تذكروني بزيارتي الرسمية الأولى لبلدكم العريق عام ١٩٦٣ حينما التقيت بأحد قادة الهند العظيم الراحل " جواهر لال نهرو " الذي كان بالنسبة لي وبفضل خبرته وبصيرته مصدر الهام متوهج على مدى الأيام وهي فوق هذا وذاك مناسبة سعيدة تتيح لي أن انقل اليكم والشعب الهندي المضياف من خلالكم تحيات الشعب الاردني ومشاعر الاعجاب والتقدير التي يكنّها لكم ولحكومتكم الرشيدة ولشعبكم المديق ولما تمثله الهند من مثل ومبادئ انتزعت بثباتها عليها احترام العالم اجتمع شماله وجنوبه وانني يا فخامة الرئيس لعلى يقين راسخ بأن الروابط التي تجمع بيننا ستزداد قوة ومتانة مع مرور الايام لاستنادها الى قيم روحية خالدة ومبادئ انسانية نبيلة وتطلعات حضارية وقومية مشروعة نسترشد

بها في رسم وإدارة سياستنا الداخلية والخارجية سواء بسواء ، فسمحوا لي ان اغتنم هذه المناسبة لاعرب عن تهاني وتهاني الملكة نور الشخمية وتهاني الشعب الاردني لفخامتكم ودولة رئيس وزراءكم السيد " راجيف غاندي " واسرته والشعب الهندي على نجاة دولته من المحاولة الغادرة على حياته قبل بضعة ايام متمنيين لكم جميعا السعادة والتوفيق في خدمة بلدكم العظيم والاهداف الانسانية النبيلة .

فخامة الرئيس :

عندما شاركتُ في قمة عدم الانحياز السابع الذي انعقد في ربوع عاصمتكم الجميلة وأود ان استذكر بهذه المناسبة الدور الفعال الذي قامت به فقيدة الهند الراحلة " انديرا غاندي " في انجاح ذلك المؤتمر فلقد كان جهدها مكملا لجهود القادة العظام الذين انجبتهم الهند من قبلها وامتدادا للأفكار والمثل التي نادى بها " طاغور " و " المهتما غاندي " و " جواهر لال نهرو " واذا كانت شعوب العالم مدينة بالفضل لهؤلاء الافـذاذ لما جسّدوه من مبادئ وقيم وبما رفدت به حضارتكم العريقة تراث الانسانية على مر العصور فان شعوب دول عدم الانحياز مأخوذه بتجربة الهند الرائعة في مجال التعددية والديموقراطية وجهودها الرائدة في مجال التنمية والتحديث .

فخامة الرئيس :

ان قضايا الانسان المعاصر المقترب مننهاية القرن العشرين ما زالت تتفاقم وتتكاثر ففي الوقت الذي تنتشر فيه المجاعة في أكثر من مكان ما زلنا نرى اسلحة الدمار تجّـرب وتنهب وفي الوقت الذي تجهد فيه دول العالم الثالث للتنمية نرى الفجوة بين شمال العالم وجنوبه تتسع وفي الوقت الذي يتقدم فيه العلم وتتاح فيه فرص اكبر للتعليم وتتكشف برامج التثقيف نرى طائرات مدنية تنسف او سيارات ومناجر تتفجر أو أفراد يُقتلون وفي الوقت الذي تُقرب فيه وسائل الاتصال المختلفة بين البشر ما زلنا نرى من يمارس اويغدي التمييز على أساس اللون أو الجنس أو الدين . وفي الوقت الذي تتابع فيه جهود العالم من أجل ترسيخ السلام العالمي نجد من يُشعل أوار النزاعات المحلية، وفي الوقت الذي

العلمي في الجامعات والمعاهد العلمية الهندية وهناك آفاق تتسع باستمرار في حقل التعاون الفني وجميعها تؤكد كلاً مسماني المداقة التي تربط بلدينا مثلما تحفز باستمرار تطلعننا نحو المزيد من التعاون والاستفادة من تجاربكم وخبراتكم في المساعدة على تنفيذ خطط التنمية الاقتصادية والاجتماعية في الاردن بما فيه مملحتنا المشتركة وتعبيراً عن الالتزام بمبدأ تعاون الجنوب الجنوب الذي تحرض عليه وتؤكدده مبادئ، وقرارات حركة عدم الانحياز التي تنتمي اليها .

فخامة الرئيس :

اسمحوا لي مرة اخرى ان اكرر الشكر على اتاحة هذه الفرصة لنا لزيارة بلدكم العظيم والالتقاء، بشخص فخامتكم داعياً الحضور الكرام الى الوقوف معي تحية للرئيس 'سنغ' ولاستمرار المداقة بين بلدينا وشعبينا .

والسلام عليكم ورحمة الله وبركاته

- Appendix 6 -

هذا المقال بقلم نبيل الشريف سأقرأه بالسرعة البطيئة : عنوان المقال "بين التخصص والانغلاق" ،

ظاهرة التخصص العلمي في جامعاتنا العربية تستعدى الوقوف عندها ودراسة ابعادها المختلفة ، اذ لا يخفى على أحد ان الجامعات في الوطن العربي تنقل عن الجامعات الاجنبية من بين أمور أخرى كثيرة طبيعة التوزيع العلمي للتخصصات فهناك التخصصات العلمية والميدانية والانسانية المعروفة التي لا تختلف في غالب الاحوال عن التوزيع المعمول به في جامعات الغرب ولا نود بالطبع ان نقسو على جامعاتنا في العالم العربي ونتهمها باهمال الحاجات المحلية واغفال التاريخ العلمي الاكاديمي للمنطقة . فما جامعاتنا إلا حلقة واحدة في سلسلة التقليد الحضارى التي تكاد تغمر بتأثيرها مختلف مناحي حياتنا في المنطقة العربية ولا تستطيع جامعاتنا بطبيعة الحال تغيير الصورة بين يوم وليلة فحتى نستطيع ان نعيد توزيع سلم التخصصات العملية بما يتناسب مع حاجات مجتمعا وتاريخنا العلمي يجب أن يتوفر لدينا قدر كبير من الاستقلال العلمي في المناهج وفي تخريج الاساتذة ولكن رغم كل شيء ، تبقى ظاهرة الفصل القطعي بين التخصصات الاكاديمية امرا فحزنا لا يتناسب مع حاجاتنا في هذا الزمان ولا مع تاريخنا العربي العلمي فكم من مثقف مبحر في علم واحد من العلوم تجده أميا أو شبه أمي في علم اخر حيث لا يفقه منه شيئا حتى البديهيات والاولويات وكم من متعلم متخصص في مادة انسانية مثلا تجده يقف كالمذهول امام آلة معينة وكما هو معروف فان الاتجاه الاكاديمي في الغرب كان يركز دائما على التخصص ويحس عليه بصورة مطلقة منذ مطلع هذا القرن ولكن حتى في الغرب فان هذا الاتجاه قد بدأ يتغير وأخذ بعض الباحثين يحتجون على تحويل الانسان الى آلة صماء محسدة الاستعمال وقد بدأ التركيز يزداد باتجاه كسر او تليين الحواجز القطعية بين التخصصات وانشاء مراكز داخل الجامعات للتخصصات المتداخلة ولكن لماذا ننتظر دائما رياح التغيير حتى تأتينا من الشرق أو من الغرب ، لقد كان الأجدد بنا ان نستلهم من روادنا العظام في ميادين العلم من امثال الجاحظ وابن سينا والبيروني وابن الهيثم ونقلد نظرتهم المتقدمة جدا في قضية العلم والتخصص .

Appendix 7

Final Exam 571 7/1/87

BACK TO THE BOOK

HEALTH

Why We Age Differently

Loneliness and other social, psychological factors play a role

"I scarcely feel my age, and although every hour of the day I tell myself, 'My poor old fellow, you are seventy-three and more,' I cannot really persuade myself of it."

—ANDRÉ GIDE, in a 1943 journal entry

Until recently, studies of the aging process tended to contradict the maxim, hoary even in André Gide's time, that you are only as old as you feel. The evidence of certain "biomarkers" of aging, including diminished heart, kidney and brain function, supported the view that growing old in years meant growing old in body and mind. But in the past decade scientists have begun to suspect that decline is not an inevitable consequence of aging. Indeed, researchers are finding wide differences in the way people age—an observation that could be verified by anyone who has encountered burnt-out 60-year-olds and relatively youthful septuagenarians (that ageless 75-year-old in the White House, to take a prime example). "You can't generalize," says Dr. John Rowe of Harvard Medical School, who heads the MacArthur Foundation Research Program on Successful Aging. "I can describe to you a 75-year-old man with a history of heart disease and diabetes, and you can't tell me with any confidence whether he will be sitting on the Supreme Court or in a nursing home."

Why do some people age better than others? The obvious answer would seem to lie in a combination of good genes, good habits and good luck. But those measures are not altogether reliable. Many athletes die young, many other people smoke, drink and live to ripe old age. (Gide, scarcely a puritan in his lifestyle, survived to 81.) The real answer, researchers now suspect, is more complicated: an interplay of physiological, psychological and environmental factors that may determine how we grow and thrive. Gerontologists now seek clues not only in the usual areas of family history and physical fitness, but in such unlikely realms as the degree of loneliness people experience in later years and the sense of control they feel over their lives.

The emerging research is part of what John Rowe calls "the new gerontology,"



Keeping pace: Bill Peck (left), 62, and Ed Coplon, 47, in 1984 10-kilometer race

an attempt to shift away from the preoccupation with disease and chronological age. The disciplines of the 16 scientists involved in the MacArthur Foundation program range from genetics to sociology, and besides studying physiologic processes they are examining pathways by which emotions and attitudes may affect the body. *Neuro*psychologist Marilyn Albert, for example, is looking beyond brain function for answers. "Now," she says, "I'm adding psychosocial variables, such as attitude towards illness and the

amount of social support/people have." Certain biological milestones of aging still stand unchallenged. By middle age, lung capacity is down, blood vessels are narrower, the lens of the eye has grown more opaque. But researchers are coming to believe that major body functions need not decline significantly, as long as they are spared disease or other damage. Much of the sagging and wrinkling of the skin in later years, for example, may be due to sun exposure, not age. Recent research at a gerontology center in Baltimore found that