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Developing a critical awareness of the key issues in undertaking research in work-based settings

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Introduction

Nayak and Singh (2021) define research methodology as a strategy for channelling philosophical principles into research procedures. Each approach is contingent upon the research topic and is intricately tied to the researcher's beliefs and values. Therefore, no approach is inherently superior to another. Crotty (1998) concurs that methodologies are the cradle of "a complexus of assumptions" (p. 66), helping us understand how these assumptions influence a choice of frameworks.

In this assignment, I will attempt to analyse some of the researchers' choices and what stems from their decisions. This will serve as an opportunity to review the methodologies used in voice research. Furthermore, this will help me recognise and identify researchers' convictions underlying the chosen designs, methodologies and methods used in academic papers (Kivunja and Kuyini, 2017; Gannon, Taheri and Azer, 2022). Research methodology covers a wide range of topics. As such, this assignment cannot offer a complete overview. I selected concepts based on their value in understanding the field, such as epistemologically opposite designs. I also focused on what might be valuable for my own research, as I may explore the pedagogical side of the voice research field, such as the teacher-student relationship or what might accelerate learning. I am a private voice teacher who values the growth of my students before everything else, and this prism will guide the topics covered in this assignment.

First, I will expose the philosophical concepts underpinning research methodology. I will then analyse different paradigms through the lenses of research philosophy. Then, I will examine research designs, methodologies and methods, selecting them through my ontological stance. I will conclude with a presentation of ethics, focusing on their role within insider research.

Ontology, epistemology and axiology

The word ontology derives from the ancient Greek *ontos* (being) and *logos* (science). As the "study of being" (Buriro, Ednut, and Khatoon, 2021, p. 240), it refers to "the nature of reality" (Al-Ababneh, 2020, p. 76), to how human beings perceive existence and its reality. In its philosophical meaning, ontology aims to exhaustively classify what exists and how it exists in conjunction with the world. The final objective is to obtain a framework for a comprehensive description of reality (Smith, 2003). In research, ontology offers two structures: an objective point of view, where reality is perceived as independent, and a subjective stance, where the perspective of who encounters reality defines it.

Epistemology relates to what makes our knowledge possible. It examines how we can be confident that what is considered "acceptable knowledge" (Saunders, Lewis and Thornhill, 2009, p. 591) is plausible. In research, it refers to "how we know what we know" and should be "the basis for understanding a phenomenon" (Kojo Otoo, 2020, p. 71).

From the ancient Greek *axios* (worthy) and *logos* (science), axiology refers to value in research. According to Khatri (2020), it poses the question of the reason for the research's existence and value and what ethical elements the researcher will consider—ethics are defined under the subheading “Key ethical issues relevant to research”. Axiology could be a moral code used while conducting research, considering the participants as a whole.

Through the research prism, the concepts of ontology, epistemology and axiology will be influenced by the researcher's beliefs and values (Kojo Otoo, 2020). Hence, the findings arise either under an epistemological objectivist lens, where the knowledge we gain about existence and its phenomenons are independent of individuals, or under a subjectivist point of view, where reality stems from individual perceptions and, therefore, can change depending on who encounters reality (Saunders, Lewis and Thornhill, 2009). A third, subject-dependant reality framework is the constructionist stance, which “views reality as being socially constructed” (Saunders, Lewis and Thornhill, 2009, p. 111). If reality and truth are interpreted subjectively, as for subjectivism, constructionism develops by posing that reality shapes with the interaction of individual realities coming together, being defined by a collective agreement. The researcher's answers to the questions posed by ontology, epistemology, and axiology help define a research paradigm compatible with their beliefs and research (Khatri, 2020).

Research paradigms

Together, ontological, epistemological, and axiological stances create a paradigm based on those stances' premises. According to Kuhn (1970), paradigms are “universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners” (p. 8). This definition suggests that paradigms provide structure but can be modified or adapted, which may be the reason for numerous paradigms to choose from depending on the research and the researcher's position. This is reinforced by Patterson and Williams's outlook (1998), who call “for new paradigms” (p. 280) to address the struggles faced in their field of research.

Positivism and interpretivism are two of the main opposing paradigm frameworks. While positivism states that reality is absolute, interpretivism values the uniqueness of each situation, making this framework more subjective (Al-Ababneh, 2020). Those two opposite stances are on two sides of what we could call an ontological spectrum, where we find various positions on reality, from an independent reality, such as positivism, to the drastic ontological nihilism, where nothing exists at all (Westerhoff, 2021). I will explore the positivist and constructionist paradigms, which are also interestingly opposed.

Positivism

In voice research, we can find examples of positivism where measurements of vocal acoustic parameters are needed. For instance, Wu et al.'s research (2021) used objective measurement tools such as Ling WAVES 3.2, a software that records and analyses voice samples. Because of these metrics, a paradigm promoting an absolute reality is needed to measure the results while separated from the study to ensure objectivity. According to Park, Konge and Artino (2020), positivism serves an hypothetico-deductive process cycle. The best scenarios for positivism are the ones where a theoretical hypothesis arises before the research. After this, a design—defined under the subheading “Research designs”—can be imagined through “operationalizing variables” (p. 690), which can be measured and tested by the experiment. The cycle ends when the experiment's results help a theory by supporting it or refining it.

Another example can be found in Chung et al.'s (2023) research, which examined similarities and differences in vibratory patterns between humans and canine vocal folds (VFs). The similarities hypothesis precedes the experiment design. High-speed video capture and 3D reconstruction of VFs movements are used as operationalising variables. The conclusion confirms the similarities in vibratory patterns and refines the theory by stating that some canine VFs layers may not be essential for human-like voice production. This study provides an example of axiology in action toward ethics, noting that it complied with laboratory animal regulations.

Constructivism

According to Cohen, Manion and Morrison (2018), the constructivist paradigm enables the selection and construction of individuals' “own views, worlds and learning, and these processes are rooted in socio-cultural contexts and interactions” (p. 54). Reality is, therefore, a construct of society and societal interactions. Constructivism arises under a constructionist epistemological stance by recognising each perspective on reality as unique, where the combination of individualities creates a base for truth and reality (The Research Methods Consortium, 2022). This paradigm can be valuable in voice research for music performance anxiety (MPA): the researcher can interview people and generalise a reality with each unique perspective they have encountered. This is demonstrated in Hogle's (2021) research about introversion in singers: she specifically seeks “insight into experiences of adults who expressed personal discomfort with singing” (p. 179) to expand knowledge on the topic. The study highlights how social interactions can create a favourable environment for singing, provided that every individual is considered equal, regardless of their singing abilities.

The voice research paradox

Pommée et al. (2018) explain how “voice can be assessed either subjectively, with perceptual scales and questionnaires, or objectively, with acoustic and aerodynamic measures” (p. 646.e1).

However, even with the possibility of only working using objective data (numbers), voice research involves humans, who are by nature inconsistent and changing (Sartre, 1943). This idea of incoherent beings has been balanced by other philosophers' views, who state that humans all follow an ultimate path, for instance towards morals (Kant, 1785), granting them a joint stable base.

Then, should voice research be observed through a subjective (unstable) or objective (stable) lens? In 2021, Kent, Eichhorn and Vorperian collected numerical data on the acoustic parameters of children and adolescent voices. One can say that numbers are objective if the calculations are correct. Therefore, objectivism should be the framework for voice research, at least when quantifications are involved. However, the aforementioned study can be deemed unstable: the method used in the experiment was having the children sustain a vowel /a/. How can one be certain of a vowel consistency if produced by humans? Here, what should be invariable (the vowel /a/, meaning that the throat, tongue and lips should be shaped in a specific way) can become a variable. Indeed, some children might have a regional accent, some might hold their tongue higher or lower, and some might find multiple variants for the same vowel, therefore not having the same acoustic resonance chamber.

Humans and their instabilities or changes in behaviour could dismantle a model based on an objective framework just by being involved, making what should be solid ground precarious. For this reason, I believe that voice researchers should be open to a hint of subjectivism in the chosen paradigm, even when collecting numerical data.

Pragmatism

Pragmatism considers the voice research paradox by balancing subjectivity with objectivity. On the previously defined ontological spectrum, pragmatism stands between positivism and constructivism. According to Feilzer (2010), it is often used with mixed methods: it relies on quantitative data (such as positivism) and qualitative data (such as constructionism). Denscombe (2010) provides a simple yet practical definition for both data types: "quantitative research uses numbers as the unit of analysis", while "qualitative research uses words or visual images as the unit of analysis" (p. 237). As pragmatism's primary method for acquiring knowledge is to delve into personal experience (Allemang, Sitter and Dimitropoulos, 2021), it draws from a subjective epistemological stance while allowing for objectivity with quantitative data. For Glogowska (2010), this two-sided paradigm enables triangulation, which is the process of using multiple methods to aid each part of a study to assert the other, a "strategy to test validity through the convergence of information from different sources" or investigators (Carter et al., 2014, p. 1).

In their research, Tamplin et al. (2018) studied the value of group singing for people with dementia and their entourage. They used a pragmatic paradigm, with quantitative data for outcomes such as

caregiver satisfaction and qualitative data with interviews. Because of this design flexibility, it seems easily applicable to voice research, where art meets science.

Each paradigm has limitations. Positivism's findings can sometimes not apply to a social sphere (Alharahsheh and Pius, 2020), while constructionism can be deemed too subjective (Grix, 2019). For pragmatism, the challenge is interpreting each method's results (Glogowska, 2010).

Research methodologies, designs and methods

Methodology is "a set of procedures that guide the use of design" (Creswell and Creswell, 2023, p. 352). The principal methodologies are quantitative and qualitative. Aspers and Corte's (2019) point of view adds some depth to Denscombe's (2010) aforementioned definition by proposing that qualitative research is attained by drawing new distinctions through more profound engagement with the phenomenon studied. Busetto, Wick and Gumbinger (2020) support this argument, stating it is used to identify the causes of observed patterns. I will focus on methods using qualitative methodologies, as getting closer to a phenomenon aligns with my research aspirations.

Research designs

Saunders, Lewis, and Thornhill (2009) define a research design as a strategy "of how you will go about answering your research question" (p. 136). This implies that the research question—the knowledge we want to gain—is already defined well enough to elaborate on a chosen strategy. Designs can fall into four categories (Al-Ababneh, 2020): explanatory (seeks to explain causality between variables), emancipatory (aims to emancipate the researcher and readers to take action on a social issue), exploratory (explores the reasons for a specific situation), and descriptive (describes in detail situations, persons, and/or events). I will focus on action research, which conforms with work-based research as it searches for practical solutions. Its specific structure would help my productivity and engagement throughout the process: motivation functions better when multiple tasks are involved and used in synergy (Eccles and Wigfield, 2020).

Action research, an emancipatory design?

When a need for change or a problem in a work system has been identified, action research (AR) is valuable (Bell and Waters, 2018). The participants, whom the change will benefit, are actors in the process and can be defined as co-researchers (Groundwater-Smith and Mockler, 2015). Because of this, AR can particularly benefit work-based research in a teaching environment: the students can report specific problems that the teacher-researcher will try to solve.

AR is a dynamic design: it evolves with the research, throughout the process, refining itself after each analysis. It follows a cyclic approach (see Appendix A): "diagnosing, planning, taking action and evaluating" (Saunders, Lewis, and Thornhill, 2009, p. 147). As this design helps a research to

improve in the process, thanks to practical relevance, focusing on practical problems and aiming for practical solutions (Groundwater-Smith and Mockler, 2015), each evaluation step is a chance to refine the approach. For this reason, Denscombe (2010) warns that rigorous ethics must be applied, a stance shared by Clark et al. (2020), who also add that “the educator is never detached from the research and remains at the research site both before and after the study” (p. 63), which necessitates thorough ethical considerations.

We can find an example of AR in MacGlone’s thesis (2020), which can be excellent to follow for my future research. She diagnosed a need to foster children’s creative musical agency and socio-musical aptitude. She planned her project by designing improvisation workshops for children. She took action by conducting the workshops. She evaluated the results through data collection via video recordings and interviews. This allowed new information to emerge, and she refined her design for another cycle. The second diagnosis indicated a need for a more structured model, which she planned and implemented. She then evaluated the new design, which she deemed adequate, and reflected on future possible improvements for new cycles.

According to Boog (2003), the “individual empowerment, self-actualization, raising self-consciousness” (p. 436) AR searches make it an emancipatory design. He states that the findings in the microcosm (the specific organisation in which the research takes place) can represent a macrocosm, explaining more significant societal issues, and the microcosm solutions could be applied to a macrocosm. This stance has been critiqued by Clark et al. (2020), stating that generalisation is only possible “within specific situations” (p. 36). From this, we can understand how the lack of objectivity—deemed as another AR limitation (Clark et al., 2020)—may influence a researcher into thinking that their findings, in a field they master, can be applicable in any other work setting, where the researcher is foreign to the field. Thus, even if the quality of emancipation (surpassing a problem and transforming the norm) can exist in the researcher’s field, we can question whether emancipation can apply to a larger community,

Research methods

Methods are the tools used in the research design. According to Denscombe’s (2010) comparison, the qualitative researcher’s methods are to qualitative research what a micrometre or a microscope is to quantitative research. I will explore methods using qualitative research. Indeed, it seems valuable in the singing studio as it aligns with the belief that voice research should contain a hint of subjectivity, which is gathered thanks to qualitative data.

One-to-one interviews

Interviews can take different structural approaches. The unstructured interview may not contain any questions. The structured interview will follow a specific prompt. While the unstructured interview is valuable for its flexibility, it might make the analysis process daunting because of the

lack of predictability of answers (Tang, 2021). This is confirmed by Kenny's research (2011) on MPA where she uses many in-depth unstructured interviews, "time consuming" (p. 96) but allowing in-depth understanding of the singers' unique perspectives. Kenny's approach highlights the importance of qualitative data in understanding the multifaceted nature of MPA that structured questionnaires could not bring. The latter makes analysis more manageable but makes spontaneity challenging as it does not allow for information not brought by the questions (Jordan, Clarke and Coates, 2021). All researchers in the mentioned literature agree on the solution of semi-structured interviews, where a framework of questions provides an efficient structure and adaptability allows the interviewer to select standardized questions or create follow-up questions depending on the outcomes.

While interviews allow for a thorough understanding of a topic's "why" and "how", they lack neutrality in the follow-up questions (Tang, 2021). Denscombe (2010) suggests triangulation to lessen this issue, a method chosen by Kenny (2011), who asked "independent reviewers" (p. 96) to analyse her interviews.

Focus groups

According to Leavy (2020), citing Merton and Kendall (1946), focus groups are valuable both at the beginning of a study for formulating hypotheses and at the end for interpreting findings. Bickman and Rog (2009) further underscore the flexible nature of focus groups by noting that the topics studied can be vast, whether conducted within a structured or semi-structured framework. Focus groups can prove advantageous in a constructivist paradigm, as the participants' relationship help create data from their interactions. For Denscombe (2010), this interaction is the main benefit of a focus group, as it aids in underlining how participants think and articulate their logic.

All the reviewed literature highlights the role of the moderator, which is to facilitate the interactions and channel the subject of focus. Busetto, Wick and Gumbinger (2020) warn about the draining propriety of data analysis if the moderator lacks experience. They add that sensitive topics may be complicated to discuss because of the group setting. There, we can imagine that one-on-one interviews can be more suitable. However, in voice research, when talking about one's voice, it can be reassuring to realise that the challenges faced are common. Knowing that others share similar issues can foster a sense of connection among participants: Kitinger (1995) even advocates that shy participants can benefit from the openness of extroverted ones. Denscombe (2010), on the other hand, talks about inhibition emerging from shy people in larger groups. Before conducting the research, a pre-interview might help determine the preferred method for potential participants. This could enable more ethicality in a research project.

Observational research

Observational research involves observation in a given context. A written protocol states the relevant information to investigate while the researcher observes. It can take several forms, such as a table (see Appendix B) or thoughts or descriptions for a more flexible approach (Creswell and Creswell, 2023). Busetto, Wick and Gumbinger (2020) state that observation accentuates the relationship between the researched and the researcher. Despite this, it may be a valuable method during insider research, defined by the researcher being a member of the community they investigate. Indeed, the researcher can set themselves aside, perhaps helping to take some distance from the participants. A disadvantage emerges when observational research is done in an unstructured setting: the observer's subjectivity reflects on what is understood and selected about the phenomenon. Also, memory accompanying the notes can fail the researcher (Denscombe, 2010), as this method does not easily allow recording, contrary to interviews and focus groups.

In voice research, observation can be valuable for understanding a context without disrupting those being studied, such as song memorisation strategies, as researched by Ginsborg (2002). There, she highlights the value of being on the field, not relying only on what participants state to do but also on "what they actually do" (p. 59).

Key ethical issues relevant to research

Ethics are moral principles underpinning someone's values or behaviour. In research, ethics refers to "an inquiry into what is right and wrong" (Bos, 2020, p. 31). It presents how the researcher chooses to avoid harm. Ethical considerations apply at all research stages and to the results: the researcher must consider potential harm. For instance, with research done under a positivist, objective paradigm, if someone possessed undeniable proof that "God" exists and could identify which of the human-conceived gods is "the one", it may be wise to withhold this truth. Revealing it could exacerbate conflicts and harm civilisations already strife over their respective deities, making disclosure ethically questionable.

In voice research, examples of ethical issues could include causing a participant embarrassment or anxiety while researching MPA, or harming the health of a participant's vocal folds, which Bos (2020) defines as intrusive research.

Ethics and insider research

As a voice practitioner, I might conduct insider research, where the researcher is personally involved in the phenomenon they are researching (Greene, 2014). Conducting research as an insider helps detect nuances related to the voice or the relationship between participants (such as students and teachers) that an outsider might have unintentionally overlooked (Forbes, 2024). Taylor (2011) challenges this proposition by acknowledging "insider blindness" (p. 13), stating that

the insider may neglect some observations, as they will become banal because of a lack of distance from the phenomenon. However, she highlights the positive aspect of a trust relationship faster established between the researcher and the researched.

Some ethical considerations should be taken into account. I will focus on what I may encounter: as a teacher, it is possible that future research participants will be my students. Taylor (2011) asks about the ethical implications between the researched and the researcher when friendship is involved. The teacher-student relationship in the studio perhaps does not define itself as friendship; however, it can still become very intimate as students expose their voices to the teacher, which is inherently personal and revealing (Serra-Dawa, 2014). Therefore, a significant level of trust is required for students to fully reveal their voices. Taylor (2011) highlights that the relationship can lead to “role confusion, conflict, feelings of betrayal” (p. 7) due to possible differences in expectations and the dual role of the researcher. Those conflicts and feelings of betrayal would be considered harmful if we refer to Saunders, Lewis and Thornhill’s (2009) idea of ethics: “the research population” should not suffer from “embarrassment, harm or any other material disadvantage” (p. 160). In the voice studio, this could be minimized thanks to transparency in the research aims and procedures, as advised by Taylor (2011). Flemming (2018) concurs with the importance of transparency as a mitigator. However, she also recognises it as a challenge as it has to be rigorously applied to be efficient. I will remember this transparency for my own research to avoid harm to the trust relationship. This aligns with my core value of honesty, which I consider essential from an epistemological standpoint.

Conclusion

I have presented how the researcher’s beliefs and values affect the paradigms under which the research will take place (Kojo Otoo, 2020). These paradigms shape the research designs, methodology and methods. For voice research, I questioned whether paradigms that do not leave room for subjectivity could be effective. Indeed, voice is the production of humans who are, by nature, imperfect and changing beings (Sartre, 1943), thus making subjectivity an inherent part of the research. Hence, I focused on methods that allow for this hint of subjectivity and used qualitative methodology. It might be advisable to research quantitative methods thoroughly to understand research methodologies comprehensively. Although I can now recognize most paradigms and designs in papers using qualitative methodologies, differentiating the subtleties between paradigms holding an objective stance remains complex.

From the reviewed literature, it was clear that one of the challenges in undertaking research in work-based settings is the closeness between the researcher and the participants, amplifying subjectivity, especially with qualitative methodologies. As I will likely use qualitative means for future research, it could be beneficial to understand how to use triangulation to balance subjectivity, perhaps using descriptive analytics, a computational method to examine meanings within the collected data (Tang, 2021). Another issue in work-based research, if working on the

teacher-student relationship with our own students, is the evolution of the relationship between the researcher and the researched (Taylor, 2011): it can be strengthened or weakened.

In considering ethical guidelines, I will ensure that all future research adheres to relevant codes of conduct as stated in The Singapore Statement (2010), proactively addressing potential ethical issues. This assignment has enhanced my understanding of research methodologies and how ethical considerations are a continuous process (Bos, 2020), aligning with the module's aim to develop a critical awareness of key issues in work-based research.

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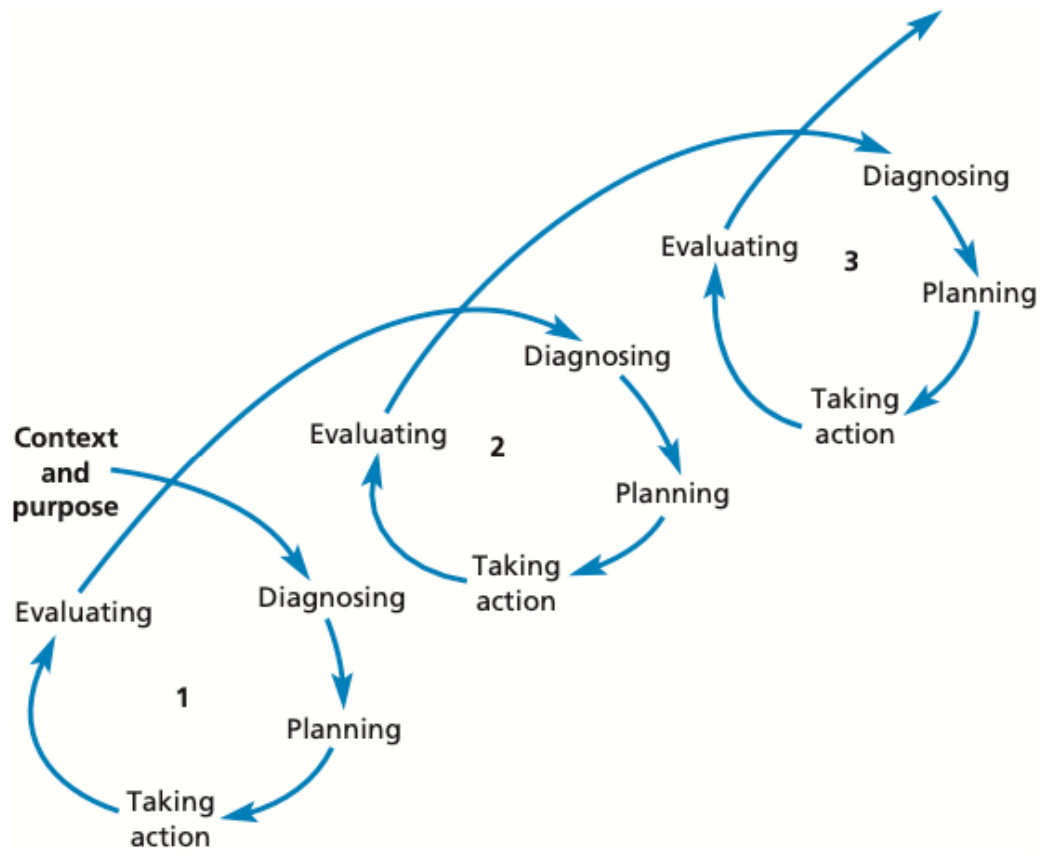
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Appendix A

Action research's cyclic design - Image taken from Saunders, Lewis, and Thornhill (2009, p. 147)



Appendix B

Table for structured observation - Example adapted from Saunders, Lewis, and Thornhill, (2009 p. 301)

Behaviour	Was the behaviour observed?	Comments
Smiles and makes eye contact with the customer		
Greets the customer in a friendly manner		
Gives the customer undivided attention throughout the transaction		
Suggests extra items that have not been ordered by the customer		
Places items on a clean tray with the tray liner facing the customer		
Ensures that the customer is told where all relevant extras (e.g., cream, sugar) are located		
Explains to the customer reasons for any delays and indicates the likely duration of the delay		
Neatly double-folds bags containing items with the Fastfoodchain logo facing the customer		
Price of order is stated and the customer is thanked for payment		
Lays all money notes across the till drawer until change is given and clearly states the appropriate amount of change		
Customer is finally thanked for the transaction, hope is expressed that the meal will be enjoyed, and an invitation to return to the restaurant is issued		