Teaching for Technological Literacy: Recognizing Technology as Communication of Social Phenomena and Ultimately of Culture: Illustrating Television as a Socially Determined Artifact.

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***Abstract*: This paper examines the possibility of overcoming technological determinism in the curriculum of institutions of technology and Vocational institutions in Africa in order to cultivate the kind of individuals with the relevant critical thinking skills needed for a contemporary technologically complex society. Using a social-historical approach in analysis and selecting television as a case study, it argued that an adequate discussion of technological literacy issues could be achieved by the shift of emphasis from technological artifacts in isolation to examining the social and cultural origins of technological artifacts, and hence to the social processes involved in deciding, selecting, designing, controlling, adopting and producing specific technological artifacts. It ultimately recommends the creative possibilities that the approach suggests for teaching and learning and for the development of cultural attitudes conducive to the advantageous utilization of technologies for the society consuming them.**

***Keywords*: Technological artifacts; social processes; the use and abuse model; technological determinism, technological literacy.**

I. INTRODUCTION

The influx of new technologies to Ghana in the last decade and a half is usually referred to by its most ardent advocates as the second industrial revolution. Consequently, a marked shift in advocacy in education is towards the use of technology. Scholars, politicians, and business advocates emphasise the acquisition of technological skills and cite global trends, scholarly writings, beneficial business, and credible political and social outcomes to support their thrust. The provision of various technologies and access to technological skills and knowledge are used as both political and business agendas; and curriculum vitae cannot be adequate without the mention of the possession of some technological skill/s. An educational institution today without an ICT laboratory signals inadequacy and inefficiency. The future is all technology, as everything seems to sing out.

STEM (Science-Technology-Engineering-Mathematics) schools are being established urgently and being touted as the future of everything, and technical and vocational institutions are being planned as technological hubs.

Digitalisation of programmes are being undertaken in every sector of public and private life – telecommunication, public sector, business and banking, politics, and social life, and all other areas of life speak inexorably of technology. A few of the representations extolling digitalization are as follows:

"ICTs have contributed immensely to improve communications, deepen decentralization, and attract micro and small enterprises (MSEs). ICTs have also contributed in automation of rural banks, networking, information sharing and the provision of ICT enhanced distance learning in the rural areas of Ghana" (Digital Commons 2012).

"The purpose of digitalization is to describe the process of enabling, improving, and transforming business operations through the use of digitalized data and technologies in order to transform how organisations conduct business and improve productivity." (The ECM Consultant 2022).

In terms of social, political and public life:

"Ghana's National Identification project was designed to solve this problem. As Africa's largest digitization project, it entails implementing an identity management system that will promote equal access to physical and digital services, social inclusion and economic development." (https.Attea.com.).

In all these, only the positive and 'one-dimensional' aspect of an ideology of positivism appears to be promoted. The thrust of technology never pauses to ask about the unintended consequences of technology and how they can be mitigated or prevented. Thus awareness is created only about the positive gains of technology in the society and economy. This paper takes a pause to ask questions about the positivism and one-dimensional ideological thrust of technology in society and the life of the people that use it. It draws from a similar orientation as Kearney (1986:203) described about Marcuse: "He never subscribed to the 'positivism' which was at one time almost de rigeur in the American university system. On the contrary, he clung to the virtues of what he termed 'negative thinking', intent on subverting the 'one-dimensional' ideologies of technological rationality which underwrote the system of advanced capitalism." Although the

paper does not consider its approach as 'negative thinking', it is an effort at employing the processes of 'unmasking' to explore effective methods of creative thinking and teaching. In doing so, it also bears in mind Appleyard's (2004) observations concerning the origins and overdependence on science and technology as one form of knowledge: "A new and unprecedentedly effective form of knowledge and way of doing things appeared suddenly in Europe about 400 years ago. This is what we now know as science. This science inspired version of the universe, of the world and of man that was utterly opposed to all preceding versions. Most importantly, it denied man the possibility of finding an ultimate meaning and purpose for his life within the facts of the world. If there were such things as meanings and purposes, they must exist outside the universe describable by science." (Appleyard 2004:227). Scholars of the Sociology of Knowledge and Science such as Bloor (1991) have amply belaboured similar perspectives on science and technology. Such perspectives are not about the rejection of science and technology as ways of knowing and living, but of putting knowing and living into perspective in such a manner that they do not snuff out alternative forms of knowledge in a cultural context and obliterate the quest for ultimate meanings and purposes of life.

Consequently, it is necessary to begin to explore different perspectives that help to generate and explore healthy critical thinking avenues about the use of technologies in Ghanaian society, culture, discourses and their impact on life as a whole – the self and identities.

Aim

The aim of the paper is first to examine whether technology is a cause or an effect of changes in society, and subsequently, how these affect the educational process of creating knowledge and learning in society. In the words of Wilmot-Smith (2019: 27), "Let's not pretend there isn't a difference between the click of a button and a statement made in a public court. The question isn't whether or not to use technology; it is how and for what purpose it should be used. "

Wilmot-Smith's observation coincides with the main questions this article seeks to examine. They relate to the need to understand the quest and implications of technological advancement and the propensity for the wholesale advocacy and sense of inevitability propagated by policymakers, scholars and business entities especially as a result of the inevitability of 'technologisation' imposed by the Covid-19 pandemic scenario. How can the decision-makers ensure that we are able to answer these questions and make our selections of technologies and their uses for humanity instead of for technology for its own sake? And for that reason, how can technological studies be made to transcend their narrow perception and patronage as artifact to a broader, creative and dynamic, and elevated literacy capable of making a transformative contribution to society and culture? How do we avoid technological determinism through the redefinition of technology and literacy in technology within its social and cultural context? Such questions become relevant in the light of the current fascination with the newest technologies such as the Internet Communication Technology (ICT) and related technologies in our society and their technological institutions being created by policy makers, scholars and business entities.

Research Purpose and Objectives

The paper is a conversation about awareness creation about technology in education. Whereas it is inevitable that the advantages that technology brings to the improvement in the lives and living conditions and standards of members of society should be encouraged, it is equally important to create awareness about the deciding, selecting, designing, controlling, adopting and producing of specific technological artifacts. Through the pedagogical processes conducive to grounding members of society in their decision-making regarding technological preferences, they can be cultivated for optimal living rather than becoming slaves of the artifacts themselves by creating the conditions for cultivating becoming better consumers and users of technology and its products.

The main purpose of these pursuits is to find a pedagogy conducive to creating awareness about the discourse and use of technology in society and how to obtain the most likely beneficial impact on society and culture. Such a tool should ultimately enable technology's participants to think about, assess, and control their own choices and uses of the artifacts by which they can make tangible and credible meaning and purpose of their lives, culture and identities. This is to achieve a similar objective as Appleyard (2004: 231) enacts through his concern about the need to prevent the denial of our 'hard, irreducible sense of our own self-awareness' by technology 'as a form of truth and as a creator of society'. Such occurrence will lead to the tragic implications of a 'shocking, passive animal acceptance, a terrible inversion of human values' as a result of the one-dimensional ideology ushered on to consumers by technology. (Appleyard 2004: 232).

Significance of the Study

The question about whether technology is a cause or an effect of changes in society is important because as innocent as it seems, and as much as it has been taken for granted in our society, the question has profound effects upon how society uses technology, how technology affects humanity and society, and what decisions are ultimately taken by policy-makers and administrators with respect to technology and its uses in society. As politicians promote the adoption and use of technologies in Ghanaian and African education and society, the question that ought to be at the forefront of researchers is how much policy-makers and administrators have worked out about the consequences of its use and the approaches relevant to reaping its best benefits rather than its negative consequences. As Kleinzhaler (2019: 37) recounted about Nietzche's first use of a type-writer and his evaluation of its implications for forming our thoughts, such questions matter

because technology has definite consequences in the formation of mental structures. Thus, in his narrative about Nietzsche, Kleinzhaler (2019) takes particular care to emphasize the impact of a simple technology like the type-writer on Nietzsche and on other literary scholars. He states:

> "In 1882, the year Virginia Woolf and William Carlos Williams were born, Frederick Nietzsche bought a typewriter, a Malling-Hansen Writing Ball. It wasn't as good as a Remington but it was cheaper. Nietzsche was losing his eyesight, probably as a result of syphilis, and hoped the Writing Ball would help. But first he had to master touch-typing. He soon gave up on the experiment. But he noticed that when he wrote down his thoughts on the Mailling-Hansen his writing style changed. It became tighter, more telegraphic and aphoristic. 'Perhaps you will through this instrument even take to a new idiom,' a friend said to him. 'You are right,' Nietzsche answered. 'Our writing equipment takes part in the forming of our thoughts.'"

The question posed by Wilmot-Smith (2019) and Kleinzhaler (2019) opens up an insight into why it is necessity to ask whether technology is a cause or effect of changes in society. Such a question should prompt both the makers and users of technology in Ghanaian and African societies to re-examine whether they are in control of technology and whether the use of technology is being employed as humanity in full possession of their faculties of reason and decision-making, or whether their use is undertaken under the inevitable control of technology. The usefulness of technology may intoxicate policy makers, advocates, scholars and business entities so much so that they may indiscriminately turn to technology as the solution to all human problems. The inevitable use of technology may lead to consumers who are used rather by technology; in other words, consumers can be turned into 'technologised' beings or products created through the process of technological determinism. Exploring the answers to such questions are likely than not to prompt users and consumers of technology, especially in education, to examine how they employ technology and how they can fashion and orient it to contribute to humanity rather than dehumanizing these interactants by turning them into 'technologized' persons.

In effect, the article expresses a similar concern as Wilmot-Smith (2019) as he bemoaned the seemingly unexamined pushing of technology to the fore inexorably in a particular situation where its use may prove to be more detrimental than otherwise imagined. In his words,

> "The general concern in all this is that a system which works well in some cases will be extended inappropriately. Technology can be intoxicating, and proponents of technological advances – judges among them – tend to promise more that it is possible to deliver. The attendant risk is that the promise of reforms will be used to justify changes that cannot easily be undone if (and when) the delivery falls short." (Wilmot-Smith 2019: 30).

Approach to the Study

The paper will not make use of measurable data. It adopts a socio-historical approach in the tradition of critical theory and discourse analysis. The selection of television as a technological artifact for investigation is a purposive selection among the most common household technological artifacts. The decision is based upon the experience of television as one of the longest surviving and popular artifacts in Ghanaian society before the advent of mobile handsets and smartphones and yet still popular in most households. A library and internet research enabled the assembling of material for study. Critical theory and Critical language awareness methods were employed for the collection and interpretation of the materials collected.

It further adopted a case study method of studying the subject in respect of limiting the types of technology selected for study. The isolation of a single case for the study follows the well-heeled tradition of case studies, and an extrapolation of the methods of physics described by Randall (1976: 221) which state: ''Select a single instance, like a rolling ball … analyze it completely to find the simple mathematical principle exemplified in it … deduce the consequences …, and test by further experiment.''

The limited number of authors for study is also in line with critical discourse and critical language awareness theories' preference for limited texts that enable a subject or issue to be focused and subjected to intensive scrutiny. Its advantage is the avoidance of boring repetitive restatement of the views of authors expressing similar perspectives on the impact of technology on society and life. A focus on a few authors and the manner in which the issues are reflected for discussion focuses the debate or conversation more lucidly.

In discussing technology and its effects on society, culture, the individual in society, and humanity as a whole, the paper adopts a socio-historical approach and selects a specific technological artifact - the television, for examination to illustrate the approach towards acquiring technological literacy instead of living under the subtle force and control of technological determinism through the influence of compliant and unsuspecting but eager educational institutions. The approach enables the author to argue that an adequate discussion of the issue requires a means by which specific technological artifacts are discussed rather than an approach in which the whole range of technological artifacts are taken together for examination.

The social-historical approach has enabled a survey of the subject through the social and historical needs, and the forces and influences that have shaped the evolution of television as a technological artifact and as a consumer product, and has thereby opened up the possibilities of the creative employment of social processes and historical context for the

development of technological products and technological literacy.

Underlying this is the kind of question that can be asked of any other specific technological artifact: Is television a cause or effect of changes in society? In other words, does a piece of technology cause transformations in society or is it rather the case that transformations in society create pieces of technology?

Research Questions

The main questions arising from the above considerations in this article, therefore, seek to examine the following: 1). How can technological studies be made to transcend their narrow perception and patronage as artifact to a broader, creative and dynamic, and an elevated literacy capable of making a transformative contribution to society and culture? 2) How do we avoid technological determinism through the redefinition of technology and literacy in technology within its social and cultural context? Such questions become relevant in the light of the current fascination with the newest technologies such as the Internet Communication Technology (ICT), mobile technologies and applications, and related technologies in our society, and in the wake of the various technological and vocational institutions being established to learn, promote, and advance these technologies in society.

II. LITERATURE REVIEW

'Technology', as it is ordinarily understood, is 'the application of practical or mechanical sciences to industry or commerce' (Collins Concise Dictionary). Its definition sets it apart from the theoretical and other realms of knowledge and human functioning that are non-practical, emphasizing its nature as an artifact. That means that the practical and mechanical dimensions of technology are being emphasized as to establish their link with industry and commerce or economics. Its link with industry and commerce projects its pre-occupation with exchange and value, presupposing that technology is primarily determined and shaped by economics or by financial considerations, and not primarily by humanistic considerations. But this raises the question as to how, once produced, the artifact, which is the technology, remains an artifact that can be consumed by human beings, or assumes a different dimension to become the producer, shaper and controller of its consumers, turning them into 'technologised' products (Foucault 1983; Fairclough 2013). 'Technologised' selves is a term derived from Michel Foucault's efforts to articulate the manner in which technology relates to, affects, and dominates the self and identity of the subjects and consequently subjecting them to its dictates by determining every aspect of their lives while shaping them rather than vice versa. In order not to abandon the self to the 'technologisation' of human beings and of society, how should the consumers of technology approach it? In other words, how can consumers of technology, who are its users or patronisers, be made to own the artifact and shape its consumption rather than be shaped by it? This is possible only if consumers of technology or the artifact are able to refer to their reason and ability for decision-making (Williams 1974).

The reference to reason and decision-making conduce not only to the individual person, but also to considerations about society, culture and conditions, in other words, the environment and context in which individuals inhabit and operate. This reference, in the same vein, points to the need for the development of technological literacy, that is, the investment of the subject with the power of control over technology through the development of subjectivities capable of reasoning, understanding, and exercising the power of decision-making as a means of grappling with the power and force of technological determinism engendered and manifested in the passive consumption of technological artifacts. Technological literacy refers to a broader range and perspective of technology, viewing it beyond its nature as an artifact to include its social, cultural and rational and decisive investiture during its formative process as not an end in itself but as a means to an end.

The concern is that, whereas the attractiveness of technology and its linkage with economic value and exchange creates practicality and the penchant for its inevitable attractions and choice, its power can still be controlled. Similarly, whereas it develops a technological determinism that withdraws control of its consumers from their own liberty, self, identity, self-determination, shape and destination, including even of those of whole societies and cultures and is consequently able to construct them into mere passive consumers, these subjects or elements are not necessarily entirely helpless in the face of a daunting and subtle force of technological determinism as it appears. Instead, these human subjects who become consumers of technology could still assume control of technology, shape it, adapt it and determine its future direction. To this end, if they are provided guidance through technological literacy in the institutions of education, and of technology in particular, they could work to preserve and uphold reason, decision-making and control over the power of technological determinism. It may appear, however, that the main consideration in the pursuit of technology in educational institutions currently suggests primarily to acquire skills to produce artifacts for the market and create economic value- a trend that leads inevitably to technological determinism.

Perspectives concerning technology and its effects:

i) Technological Determinism Model

The discussion draws mainly on Williams (1974) and his examination of technology and its meaning in society. Williams set the basis for a discussion and review of the emergence of technology in society and its effects and impact on human beings and human affairs that is still relevant and continues to be influential on account of the need to constantly re-examine the human condition vis-à-vis the dominance or otherwise of technology in society. There are two broad opinions with respect to the question. One opinion takes it for granted that television has consequences which are

the direct outcome of the technology. This opinion is registered as technological determinacy.

Technological determinism observes, as Williams (1974) pointed out, that new technologies, discovered through the processes of research and development, become the pacesetters for social change and progress. Consequently, the modern world, modern man and his condition can all be accounted for by technology. Thus, in the case of television, for example, upon its invention as a result of scientific and technical research, it altered all other media of news and entertainment which existed prior to its invention. Again, such a view would argue that its power as social communication enabled it to alter many institutions and to change the social relationships which had existed before. In addition, by means of its electronic medium, the basic perception of reality has changed, affecting relationships with each other and with the world. And still more so, by its properties as a medium of communication and entertainment, in concert with other technologies, it has altered the scale and form of society. Finally, as a medium for news and entertainment, it produced unforeseen consequences affecting the family, cultural and social life.

In spite of its attraction, this view of technology and its effects can be argued to be rooted in the presupposition that technology is separate from society, an artifact which is self-sufficient. This view stems from the fact that its proponents have abstracted technology from its very origins which is the society. Ultimately, instead of society creating technologies, technology is said to create societies. Williams (1974), in examining the proposition, sums the angle it presents poignantly commenting that it means: 'the new technologies are invented as it were, in an independent sphere, and then create new societies or new human conditions' (Williams, 1974:13). The separation of the artifact from society isolates it as an entity with no social connections, relatedness or genesis. The isolation in this form, invests the piece of technology with its own existence as a subject, and as an entity endowed with the power to function independently of human agency and control. Those who hold this kind of view are eligible to enable the implementation of new technologies into contexts without regard to any feasibility studies regarding how they would work, should be adapted, fitted, or received and integrated into a particular context, and without a proper investigation of what specific solution of problems they should be solicited for except for their attraction and supposed fashionable value. They take the existence of technology for granted and facilitate its determination of their own lives and that of others.

These perceptions may have arisen from the dominant use of, for example, television in the society. Television became at one time, almost the most popular medium of social communication with regards to news, entertainment and the reporting of events. It became so popular as a household artifact that some families still spend long hours by it. Moreover, the number of channels available owing to satellite dishes and cables makes it possible to watch a wide variety of programmes or events. In addition, transmission which lasts on some channels for twenty-four hours a day makes it possible still to stay for very long hours by the television. In this sense, personal and social relationships both inside and outside the family were altered considerably by the fact that outdoor activities especially with friends have been curtailed by the time spent watching television. On the other hand, television is also seen to have brought the family closer together in the sense that it made it possible for more and more family members to stay at home and watch it together. And, one might even go further to say that the mass production and relatively cheaper prices of the piece of technology made it even possible to own two or more television sets in a home, and even to the extent that each member of a family could possess one for himself/herself for which sake the family was further altered, keeping members indoors yet isolated from each other to watch television. Thus, various scenarios are created in which television can be described as effecting change and reorganizing the essential social units such as the family.

In another area, television is said to have made advertising a more poignant means of attracting consumers to products. Commercial advertisements on television have produced big sales for sponsors as well as persuading consumers to consume products according to the persuasiveness of the advertisements. Television has by this means created packages to which persons are addicted. The influence of television adverts in creating addictions in persons means that it determines tastes and preferences. Examples such as these have encouraged the view of the deterministic properties of television or of any piece of technology whose influences are perceived as such. However, it is argued by Williams (1974), and other scholars, that this view, in as much as it is plausible and attractive, nevertheless, fails to see beyond to the underlying causes themselves, which are the causes of television per se. However, in order to expose the fallacy in isolating technology or the piece of artifact from its social relatedness and thereby creating an entity capable of assuming control over human agency leading to the notion of technological determinism and the understanding of social phenomena through its prism, an alternative model of understanding technology was proposed known as the use-abuse model.

ii) The Use-Abuse Model of Technological Artifacts:

The use- abuse model disagrees with the view offered by technological determinists. Instead, it asserts that television as an artifact is neutral, nevertheless, its essence is in its role as a medium of social change. The emphasis here is on the neutrality of the artifact, and the provision of the artifact as a medium, an intermediary or mediating forum rather than a creative factor or agent. Hence, in the context of the discussion of television as a specimen of technology, it can be described as the by-product of a social process which brings about social change brought about because it is employed for

particular purposes of the social process. Its effects are possible only because a social process is set in motion that needs the piece of technology for the implementation of the purposes of society. Television can thereby be seen as a symptomatic technology, one symptomatic of a social process, but not constitutive of the social process itself. Consequently, the use-abuse model sees television as an instrument selected to meet the needs of a new kind of society, especially in centralizing, entertaining and the formation of opinions and ways of behavior. It also sees it as promoted towards the maintenance and development of a domestic consumer economy, that is, as a popular household artifact for news, entertainment, and so on. Then, the model again perceives television as being used to organize a cultural and psychological inadequacy manifesting in passivity in populations to the advantage of those behind the organizing. Finally, it is seen as a means of exploiting the needs of the modern world which consists of a large and complex but atomised society.

This alternative view of the use-abuse model, just as technological determinacy, regards television technology as accidental, favouring no particular reason or purpose for the invention of television technology at all. Yet, although television is perceived as accidental according to this view, it invests it with a use: it has been harnessed to fruitful usage, ordering human affairs more powerfully and effectively by means of it. This view, however, like its counterpart, technological determinism, abstracts television from the social process itself. That is, it does not take into account the fact that the shaping of television itself has a social history. The use-abuse model, thus, also ignores the social and historical shaping of the technological artifact and the implications of such a perspective.

It is this view of technology that is ultimately responsible for the employment of technology as fashion, and as a showcase for advancement, prestige, and for the implementation of technological programmes that eventually become white elephants or mere showpieces because it promotes the use of technological artifacts for purposes that ignore the social processes involved in their production and perceive them only as instruments for the manipulation of life rather than for the creation of solutions to societal and individual problems. The model, therefore, in spite of making the human subject employ technology as a tool, ironically subjects the human subject to the control of technology as an independent artifact determining how it must be utilized. On the other hand, the third model views technology in a fashion that makes the human subject to a great extent the genesis and controller of any piece of technology and its use.

iii) The Social-Historical Process Model

A third model that can be classified as the social-historical process model, takes into account the history and shaping of television by society itself. This approach makes intention a central part of research and development, and therefore, of the existence and operation of any piece of technology or artifact. These intentions which are contained in known social needs, purposes and practices are central to the development of the technology of television. According to this view, television was developed through a series of events in sequel to the inventions in electricity, telegraphy, photography, radio and motion pictures. From 1875, a specific technological objective towards the production of television had been set up. The project was interrupted by 1890 and had to wait until the 1930s to be resuscitated to produce the first public televisions (Young & Barnett, 1991). With the introduction of the element of intention, human subjects have been introduced into the understanding of the emergence and control of any piece of technological artifact and hence its embeddedness in historical and social processes and uses. It, above all, opens up the possibility of human control of technology and its processes, and ultimately, the introduction to technological literacy as a means of understanding, positioning, building control, and humanizing technology rather that making technology the agent of human control and dehumanization.

The social-historical process model enacts the first step towards the achievement of the discovery of television as the study of electricity. Electricity became a project for study in the 1830s in order to find a solution to industrial needs. The industrial revolution had created needs over extended areas, especially with regards to the mobility and transfer of power sources for a flexible and rapid conversion of power to various forms and for various applications, and for the lighting of the cities and houses. But one of the objectives was also eventually to discover a means of transmitting still pictures and moving pictures in the process towards discovering television in order to provide entertainment, information and news for the bulging populations in industrial settlements that were now developing differently and were no longer cohesive and organized as the old rural and communal societies. Television developed, therefore, as a way of making provision for populations in industrial settlements as a means of creating cohesion through social communication in spite of the long distances created geographically, physically, and psychologically among people created as a result of the effects of the industrial revolution.

Moreover, some elements constitutive of television such as the thermiotic valve and the multi-stage amplifier were late in being invented (Young & Barnett 1991). This did not happen until 1914. Young and Barnett (1991), further observe that television was researched and invented in order to fill the gap of social communication created after business and commercial communications had long been established. Initially, it took a social form as sideshows until it was developed into the motion-picture form as theatre. Thus, television developed both as an incentive and a response within a phase of general social transformation. This means that there always existed a project of selectivity and intention in its development. According to Raymond Williams, 'it is especially a characteristic of the communications systems that

all were foreseen – not in utopian but in technical ways – before the crucial components of the developed systems had been discovered and refined' (Williams, 1974: 19). Consequently, one cannot assert the claim that television has created a new society nor new social conditions, although one can assert about television that it was conceived as a response to these very factors. The new social conditions and society which were the outcomes of industrial production created new needs, new possibilities and also the need for the scientific research towards the production of television.

The direct needs that gave rise to the incentive to develop television technology consisted of the attempt to improve communications, especially military and commercial communication systems. The needs of these systems defined the designs and object of the research and artifacts. Out of these also developed new needs and crises which needed to be responded to in the form of social, economic and political problems and crises.

All the above mentioned processes were consequences of a conscious response to the problems of social perspective and orientation which arose from the industrial revolution. The industrial revolution had initiated the creation of new relations between both person and person, and between person and things, and they needed new arrangements by way of new forms of social communication in order to accommodate and to utilize the new possibilities and alternatives made available from the crises accompanying the breaking of the old existing relations. The new forms of social communication were therefore designed in their forms to accommodate specific contents. These specific contents defined the specialized nature of forms of communication.

As noted earlier, the development of television came about from the increased awareness of mobility and change as lived experiences. Consequently, there were several different directions in which it could have been developed as an artifact. This means that its present form is one of several optional developments available to its researchers. However, the important focus here is the social nature of the selection of direction or design in the development of the artifact, as it was not developed as an artifact qua artifact.

By the 1940s and 1950s investment in television was high and rapid. This level of investment was itself driven by the social needs created by the rapidly changing nature of the economic and political, and consequently, the changing social structure and relations within the society. In these circumstances, social and physical distances had become greater and increasing all the time. It affected the distance between the home and the productive centres. People were looking forward more and more to a system that could transmit message from 'out there' in the distance into their homes. Not only that, they wanted to experience it as a lived experience and to get guidance with regards to relation with the outside world. (Young and Barnett 1991).

III. DISCUSSION

The Implications of the Social Origins of Technology for Curriculum Design and Teaching:

The entire discussion on the social origins of television, that is, television as a history of people and a social construct with alternative possibilities has wide-ranging implications for knowledge production, teaching, as well as for curriculum design. Firstly, it presents a view of technology as problem-solving growing organically from a social and cultural milieu. Since technology is not considered restrictively in terms of being an artifact, students can be led to consider what kinds of situations and needs can give rise to specific types of technology. Under these terms they may be able to suggest what variety of technologies could be designed to tackle the same needs, or how existing technologies could be adapted to tackle different needs. Students once engaged in such direction can attempt to identify who and what combination of things will be needed in the process of designing and shaping the technology to its actual existence, including what policies and principles would guide its form and content. Thus, with respect to television they could identify the military, political and social forces which gave rise to the process and the push to research and discover it.

In identifying these forces, it is then possible to discuss other combinations of material and factors which could have created alternative designs and why these origins were not chosen; or of the possibility of making different choices rather than those that gave rise to existing designs and technologies, for example, with television and its technology. We have already noted too that as a technology, it was designed in the broadcasting model. We have already noted the resultant problems with regards to social funding within this particular kind of model. One question that might arise for students in respect of this fact is perhaps how to prospect other kinds of model which could circumvent this problem of funding. Or again, if the broadcasting model of television is to be constituted into a more social technology through funding, could students design a feasible method of achieving this purpose? Hence, it could be possible for students to examine design in many ways and attempt to solve problems which the existing technology poses.

Another area in which students could prospect with regards to television is how to make its contents the result of social processes rather than deterministic and manipulative forces. Owing to the fact that television was invented before its content began to be formulated, it has been in danger of being manipulated as an artifact to enshroud it in determinism. Other opinions from review sources suggest that 'so many content that formed our day to day lives and resented on theatre stages are among the existing content that were built into television content' (Reviewer: 2022: 16). While the argument is plausible, television may not have been purposely created for such content. Instead, it confirms the argument that such theatre-rejected content may have found room in

television space precisely because there were no specific pre-fabricated content determined for it. It was not designed for popular theatre. Hood (1983) observed that the current model of television and the kinds of input it makes possible towards programming is so constructed by programmers that members of the audience are expected to watch the screen and to decode its message 'correctly'. This decoding means that they ought to agree with the message cast on the screen as the commonsense view of society, whereas, this message has been constructed by the media people who are being manipulative enough to present it as the natural commonsense view. This is the kind of deterministic orientation that students could be made to debunk and to explore ways of making programmes which are social and make the technology a social product.

Making programmes social could consist of finding answers to such questions as the contradictions which result between the attitudes of some of the viewers and those of the programmers in spite of the efforts to make viewers think in the direction shaped by the media people.

Thus, students could learn to explore beneath the coded messages and discover instead new methods of representing the social process in television content and programming. In order to decode programmes they may have to be able to identify those behind the programming and the principles of programming: who funds the programmes and why, and who it is directed towards? With regards to the making of programmes, one realizes immediately that more often than not, it is people of middle class background who define things and values according to the ethos of their class. While this may seem on the surface arguable, at least, the media scenario in Ghana and Africa in general is replete with middle-class producers, presenters, and personalities who shape public opinion. Such personalities, even if they originated from rural or underprivileged classes, quickly transform into middle class personalities. A further evidence can be gleaned from the role of the media as defined by Fairclough (1995) and Thompson (1990):

> *In modern culture, the media constitute, perhaps the most powerful force in the production, transmission and the fixation of culture and symbolic forms, through what Fairclough (1995:2) refers to as its 'signifying power'. Adopting Thompson's description, culture is the 'pattern of meanings embodied in symbolic forms' (Thompson 1990:132). The media creates, defines and redefines the symbolic values of the society through the creation of symbolic forms and discursive forms, and transmits and fixes them as culture. 'Symbolic forms are social phenomena' because they are exchanged between those who produce them and those who receive them. And as the media's fundamental nature and role depend upon this production for exchange between producers and receivers, their products inevitably become an everyday and popular affair (Thompson 1990:164).

Furthermore, the media is tightly connected with politics and politicians as Bakhtia (2006: 174) observes:

> *"Whatever the case may be, the media play an integral part in political persuasion. They are the medium and mediators of political knowledge. Courting the press and feeding their egos ensures favourable coverage for political leaders, making the introduction of policies or alterations to existing ones easier to accept (Smith, 1990). Political strategy needs to incorporate media strategy because the media have a crucial impact on political efficacy and political trust (See Moy and Sheuffle, 2000; Negrine, 1994)."

These connections make media personalities and those who fix their contents mainly middle class players than ordinary as one might suppose. In the Ghanaian context, it is indisputable.

In the case of funding and owning of programmes, these could be related to some particular interests or sponsors, where there is some autonomy for television; in other cases, it could be a state monopoly or an instrument of a dictator.

IV. CONCLUSION

All these complexities in the formulation of the content of television have to be examined and explored by students to enable them gain a broader perspective of the technology, and hence the possibilities of reinventing content that could more often than not fulfill social needs and cater for the crisis which the social process churns up. Such an approach to technology opens up individuals for active participation in the design processes of the technology and involves them in shaping the course of its development rather than becoming mere passive consumers and patronizers of technological artifacts or of technological skills. Ultimately, the direction of students, whether they are active participants in the design processes in the light of social needs or rather passive consumers of technological products, is an indicator of the attitudes and behavior of members of the society towards production, consumption, and labour in general. It is thus, also and above all, an indicator of the cultural orientation of a people and its ability to take control of the social processes that shape their lives for best advantage, or its inability to do so culminating in the abandonment of participation in the social processes that control and shape their lives to a culture of passivity and non-involvement whereby they become technologically determined. The choice lies mainly in the approach to teaching technological programmes. That choice determines whether the culture of the next generation of Ghanaians, for example, could include the ability to control their own social processes or not and become simply passive tools in a huge technologically determined society with its inevitable dehumanizing processes and consequences. The implication of all of these is that the cultivation of the ability of a culture to take control of its own social processes begins with the kind of education that perceives the social and cultural story in technological designs and artifacts and utilizes this knowledge for the modification and production of new technologies as

tools of production in the solution of social problems and crises and in the sustenance of social processes rather than cultivating a culture of being passive consumers of technological products and being determined by them. The emphasis of technological literacy in the technology curriculum and its pedagogical processes are therefore crucial in this development if they are to indicate a process of integrated knowledge and critical thinking in recognition of the social and cultural origins and processes of technology, and hence should take precedence over the heavy emphasis on unintegrated technical and arti-factual knowledge in education.

* The two references and quotations above are extracts from an article under review in the SCIREA Journal of Sociology. (Adjoe 2022: 2 & 4)

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