Postphenomenology of FRP Material on Grand Banks Yachts Production Ship Design

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Article History
accepted 12/10/2020 approved 05/02/2021 published 16/02/2021

Abstract
The use of Fiberglass Reinforcement Plastic (FRP) as the basic material for forming ships does not necessarily change the appearance of the fishing yacht design produced by Grand Banks Yachts (GBY), which has been famous for a long time with its classic style. The phenomenon of GBY product models with classic characteristics is interpreted as beautiful by special users with all their interpretations of beauty, thus attracting a lot of interest. The research problem in disclosing the concept of design sustainability through GBY's FRP technology is interesting to examine with the structuralist functionalism paradigm, where FRP elements have characteristics and properties that can facilitate and even replace the role of humans in their use. The case study method used in this study explains that the FRP material on the GBY vessel can be interpreted as a social phenomenon in a posthumanist context, assisted by Don Ihde's post-phenomenological theory, which dissects the relationship between humans versus this technology. Explain the research results in the form of individual and collective interpretations as an aesthetic expression of a GBY product concept which is a posthumanist phenomenon. The research objective as the end result is to find a posthumanist concept in FRP material technology in aesthetic interpretations of GBY products.

Keywords: *FRP, Grand Banks Yachts, postphenomenology, design, poshumanist*

INTRODUCTION

GrandbanksYachts (GBY) is an American company that has long been capable of producing trawler-type fishing boats. They are known by maritime enthusiasts and hobbies worldwide because they can maintain the traditional form of ships that have become a tradition into more modern packaging. American Marine Yachts Ltd. Several design experts left American Marine shipyards to focus on producing the first of the ship designs known as Grand Banks (GB). The boat design, recognized worldwide as the Grand Banks Heritage Series, is iconic built first from wood and then, starting in 1973, starting from fiberglass at a new factory in Singapore. The fact is that the GB's general design style is widely imitated by other shipbuilders or builders for a yacht-like fleet and is sold under dozens of names. However, no one can equal the construction quality for these famous Grand banks. 1962 was the name of the shipbuilding business in Junk Bay, Hong Kong, before changing to GBY. The first product launched in 1963 left a legendary hull shape, mostly seen in the shape of the hull lines that would become known as the Grand Banks Yachts (Rochyat 2016, 70).

Figure 1:
American Marine Ltd. Wooden Classic Boat
Source: (Hensel and Cooper 2012)

The research, entitled The Study of Posfenomenology of FRP materials on Grand Bank Yacht Ship Design, took the substance of the study of social objects wrapped in material objects in the form of FRP technology posthumanist values it. These values will be related to the meaning and use of FRP as a phenomenon of the object of study. This research aims to see the interrelation between humans as users of GBY products and the applied FRP technology. The target is in the form of an interrelation concept, namely; when GBY users interact with GBY products as if or even feel more deeply the posthumanist sensation of FRP technology. This research's

target is considered essential to be studied, where previous studies have not examined the posthumanist symptoms of objects originating from technological phenomena associated with their social interrelation. The structural-functionalism paradigm is used to see the interrelation of each colonial building structure related to FRP technology. The research focuses on case studies of the causal relationships of using FRP as a human substitute in ship production lines and the use of FRP when used by humans, where the social consequences that arise are the emphasis. The social effect in the form of a reduction in the contribution of human labor is a problem in itself, where on the other hand, the social effect is in the form of adding values based on the aesthetic interpretations of the user.

The combination of classic styles in the modern era is packaged in engineering and design in all parts of the ship's hull and the builders' base. All work is carried out in great detail and is done by experts and professionals in their fields so that the overall form and technology is the work of excellent art and technology. In the end, they are making this GBY production ship unique for fans. The phenomenon of interior and exterior design of the GBY production ship is very close to using the materials or materials that build it. The change of hull material from wood to FRP technology is very radical, especially in design and production efficiency. Some modern fishing boat manufacturers are gradually abandoning wooden trawlers. Now many producers have switched to using boats made of fiberglass as their product contribution to traditional fishers as well as modern, as well as maritime activists. This is because the amount of wood is increasingly limited, and the price is also costly. Also, wooden boats require much maintenance and have a limited service life. While fiberglass boats' advantages include the age or service life of the ship is more durable, maintenance is much more comfortable and cost-effective. Fiber ships are also much lighter and have more leverage in fishing production. The process of making fiberglass boats that are widely made, using the Fiberglass Reinforced Plastic (FRP) technique (Ardhy, Putra, and Islahuddin 2019, 143). The production aspect of wooden ships requires more energy than the production of FRP materials; the vacuum infusion method on FRP has several advantages on production results and the need for fewer hours of people. (Atmanegara, Pribadi, and Hakim 2016, 29). FRP technology in shipbuilding hurts the wooden craft workforce; in this case, wooden boat artists are marginalized.

The structural-functionalism paradigm is used in this study because this paradigm's significance places more emphasis on historical aspects that support the interrelation of social and material objects (Ritzer 2012, 399). The consensus theory approach dissects the agreed FRP technology as the ideal wood substitute constitutes

norms as a shared consensus as fundamental to society (Ritzer 2012, 400). Postmenology is a flexible approach developed by American philosopher Don Ihde. The main factor in this approach is the role of perception. Ihde believes that perception has always existed, and the idea of "perception" can be extended from the "body-sensory" or micro perception stage to the "cultural Hermeneutic" and historical, anthropological "or macro perception stages. (Sumartono 2017: 70).

Posfenomenology explains that technological relationships must be considered to fully and deeply understand technology by opening space for philosophical explanations to revise the understanding of subject-object separation in technological philosophy. In this opportunity, Don Ihde's post-phenomenological theory translates the interpretation of the GBY user group.

The description above, the problem states how phenomenology is included in the FRP technology towards the continuity of the classic design of the GBY production ship? Meanwhile, this research aims none other than to reveal the phenomenology concept included in FRP technology to the continuity of the classic designs produced by GBY.

LITERATURE REVIEW

The 2016 Rochyat Journal article, entitled Study of the Application of Classical Design Styles on Cruise Ships Made by Grandbanks Yachts, examines the issue of design style maintained over a long period. Aesthetic factors have a lot to do with the visual application or product design by consumers. The aesthetic factor contains visual appeal that requires consideration of the use of colors, shapes, and so on (Rochyat 2016, 73). The issue of material is only slightly discussed in this study; the emphasis on aesthetics as a model of design style is the main thing that becomes the substance of the study. Meanwhile, the current research examines the elements that makeup aesthetics from the point of view of function and technology, which impact user groups' interpretation.

Yuwanda etc. (2013), In an article entitled Design and Construction of Fiberglass Catamaran Boats for Fishing. The structuralist point of view in engineering is applied to the elements that form the ship, the evolution of the boat is also a concern in this study from its actual shape and type in the past (Yuwandana et al. 2013). The weakness of this research is the absence of elements that offend the subject in making it so that the approach built outside the context of engineering does not provide input in the form of discourses that should be the basis for its formation. Another technology-style article by Sulkhani et al. (2013), in a journal article entitled LPPM IPB Fiberglass

Boat Design in Cikahuripan Village, Cisolok District, Sukabumi (Fiberglass Boat Design LPPM IPB Donation in Cikahuripan Village, Cisolok District, Sukabumi), the positivist research paradigm with its comparative study approach concluded that fiberglass could be considered as a primary material for shipbuilding.

Luthfi Adam (2009), This article seeks to answer the relationship between humans and internet tools and technology? Then, what do humans experience when they are online? These questions contain existentialist contents because they question the existence of something, be it humans, tools, and technology (Adam 2009: 75). The study of the relationship between humans and internet technology existentially focuses on internet users' experience using Don Ihde's explanation of variations in the human-technology relationship. It was found in this study the habit of perceiving the online world as a virtual reality that is imagined as a reaction to fight and to be opposed to the real world. Online habits may make humans become tools.

Robert Pepperell (2009), writes that Posthuman technology is proof that most living functions will be reproducible machines, and most machines will get life-like qualities. One of the posthumanist theory claims presented here is that there is no absolute separation and division between any "things," as between ourselves and the environment. Self and the environment are more accurately understood as a continuous whole. This sustained view of the world seems incompatible with everyday experience, where things appear separate and independent. Pepperell argues that it is possible to distinguish between good and bad art, not only based on personal presumptions or habitual responses but based on aesthetic content and the perceptual value of work and conceptual qualities. Aesthetic properties as belonging to the object that is felt or the act of perception. View states that good art is aesthetically stimulating and lousy art is aesthetically neutral, on the basis that one thing that is desired from a work of art is aesthetic stimulation, by whatever criteria it is judged. Inevitably, the criteria that determine whether something is aesthetically stimulating or neutral is highly dependent on the context in which the objects are understood: aesthetic choices are not entirely ahistorical.

METHODS

A qualitative approach to uncovering large phenomena as a picture of the truth by understanding the continuity of the classic GBY design with FRP technology. Qualitative is a general term for a series of attitudes and strategies for conducting investigations that aim to discover how humans understand, experience, interpret, and produce their social world. Empirical phenomena of research subjects such as; behavior, perception, motivation, action, as a whole, through descriptions in the form

of words and language, utilize various natural methods (Moleong 2017, 7). Through a posfenomelogical approach, this research examines the variations in the existential relationship between humans and technology, with a focus on the analysis of the user experience of FRP materials on the Grand Banks Yachts Production Ship Design using Don Ihde's explanation of variations in human-technology relationships. (Lim 2008), that is:

1. Body relationship.
   In this connection, the tool is used as an extension of the human body. Tools also become part of the human body about the world around them—human "Bodies" with tools. Tools considered to be a mediator between humans and the world are part of the human bodily experience. Ihde adheres to a concrete form of technology. Technological materiality allows the extension of the body. In the context of using technology, it involves seeing things in a certain way, resulting in perceptual changes in body taste. Technological tools are considered to be an extension of the human body. FRP technology is considered part of the human body in directing human intentions to the world of life. Tools do not stand out because human attention focuses not on the tools but on what the tools will do together. However, the tool is not transparent because there are still differences in experience when using the tool and when not using tools.
2. Hermeneutical Relations
   Tech tools read as a text that needs to be interpreted. Hermeneutics means interpreting the text's reading, which needs to translated into something that can be understood. If in a relationship the body is semi-transparent and can be an extension of the human body, then in a hermeneutical relationship, the tool must be seen and recognized (opaque) to be read and interpreted. In the Hermeneutic connection, the reading becomes essential. What is read then becomes the focus of human intentionality, namely the terminus of human visual perception; perceiving means is reading, and reading means requiring interpretation. In this case, FRP Technology has material characteristics so that it can be read.
3. Relationship Difference
   This relationship is another view from Don Ihde, who views technological tools not as objects, but something else or, more precisely, as a quasi other. To borrow this term from Emmanuel Levinas. Other people, like others, are seen

as having radical and unlimited differences. This concerns the problem of anthropomorphism, namely human-like technology, to emerge here.

4. Background Relationships
   Technology acts as a background. All kinds of technology still need humans to turn on, but the machine runs by itself after that. This type of technology will serve as a background for humans in living their world of life. After the engine runs itself, the engine itself disappears. We are living under the influence of these tools, but we are not aware of their presence. Technology is in the background or sidelined as an absent and unnoticed presence but influences human experience and perception of the world around it.

The concept of the classic GBY design's continuity with FRP technology describes the realities behind it objectively and correctly. Objectivity is formed by data based on relevant data collection and analysis techniques obtained from the actual situation. The interpretive perspective through structural-functionalism directs the analysis to the findings and disclosures based on engineering and social engineering facts to be interpreted.

Case studies are used as a research method that means the results of strategies in some instances, by observing, researching, and interpreting FRP technology cases about social interrelationships in groups and individual users and those in the large family of GBY. The case, in this case, has limitations. The posthumanist approach examines the relationship between social actors and the technology applied by GBY to lead to the transfer of authority between them. Meanwhile, post-phenomenology examines the elements of FRP technology more deeply; in this case, it will be related to a reality that will prove that FRP technology is a phenomenon. Research locations have been carried out on classic GBY product objects such as the GB Europa model and the GB Auletian Class model while the researchers were in Singapore and Malaysia site factories.

Sources of data are obtained directly from material objects and literature as valid references. The informants' technique uses purposive sampling by selecting the informants who are considered to know best so that the possibility of informant choices can develop according to the research needs. The object of the ship produced by GBY is primary data, while the results of interviews and other data collected will be secondary data (Ratna 2010, 144). Documents and archives in the form of pictures, photos, or clippings of magazine and newspaper articles to add references to material objects of GBY products. Diachronic and synchronic analysis of historical documents

is carried out in examining reality. Observations were made by observing the FRP technology structure, while the observational data were obtained by looking directly from a review of the literature and the researcher's experience while at the research location. Observe to document visual data, especially the application of FRP on the GBY production vessel. The existing reality will become facts, which are then recorded visually. Field observations are beneficial for clarifying the description and analysis of the data presented—the literature study collected historical data on GBY, FRP technology, and GBY social groups. A literature study is carried out to obtain information and references from library sources related to research. This literature study is expected to provide a foundation in interpreting the concept of sustainability of GBY production design with FRP technology.

RESULT AND DISCUSSION

GBY production ship technology with FRP technology has long been known and has been widely used as the primary material for shipbuilding since the change from American Marine Ltd. to become Grandbanks Yachts. FRP technology is significantly superior to wood, such as long life duration compared to wooden ships, with less maintenance than wooden ships, often patched due to leaks, and FRP is resistant to attacks by sea worms seashells. The production time of the GBY FRP ships is shorter, easy to shape, and very light. Advantages in technical and economic terms impact the demand for GBY production to continue to increase; however, the strength of the hull construction often causes accidents at sea. Several other considerations in conducting the study of FRP materials include:

1. The mass production of GBY (using molds) is fast, cheap and many shipyards can make it due to the Standardization of Hull FRP Laminates with a small investment cost, straightforward technology and does not require highly skilled labor, and uses little labor.
2. The hull of the GBEU and Auletian Class series based on FRP has sufficient strength and can anticipate waves and collisions of hard objects in the coastal area. The class rule requirements regulate the ship production process at the GBY shipyard, which includes the maximum tensile strength and bending strength on the FRP ship hull laminate schedule.
3. Based on the BKI rules (2006) rules for Non-Metallic Materials Part 1, the required tests are tensile and bending tests. These rules refer to the International Standard ISO 14125 (1998) and ISO 527-4 (1997). The tensile

test aims to determine the value of tensile strength, fracture strain, and modulus of elasticity, while the bending test aims to determine the value of bending strength and modulus of elasticity (Rahardjo, Maydino, and Muis 2017, 257).

The analysis was carried out on the ship design of the GB Europa, GB Sedan, and Auletian Class series, the primary material for shipbuilding from FRP, where the hull construction is reinforced with longitudinal and transverse reinforcement made of fiberglass layer frame beams with dry ivory wood content with GB42 size specifications:

Length (LOA) : 43'3"
Beam : 14’1”
Draft : 4’2”

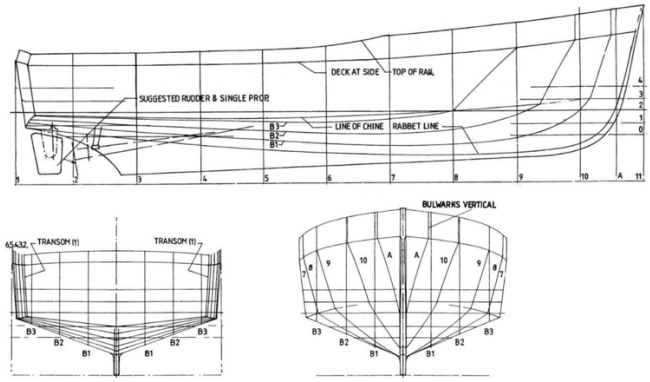

Figure 2. GB42 Hull design
Source: grandbanks.com

Schedule Laminate fiberglass layer, the mold is carried out by forming the hull using FRP material. This lamination scheduling technology does not consume many workers to minimize costs (Ardiana et al. 2014, 46). The finishing is to give the surface of the outer FRP layer that is prime and also painting (underwater for anti-fouling paint) as needed. This is done to repair the less than perfect outer FRP layer (smoothing) and also polishing so that the coating looks clean and shiny (Rochyat 2016, 76).

Figure 3. The hull of the new Grand Banks is made of a conventional layup of vacuum.
Source: https://www.passagemaker.com/cruiser-reviews/grand-banks-new-dawn

Aesthetic factors have a lot to do with applying industrial product designs by the GBY user group. The factor of visual attractiveness requires consideration of the use of colors, shapes, materials, and everything that is seen visually. GBY provides visual effects of the past very well by only changing the material and maintaining the hull's basic outline, which still looks like a wooden ship line (Rochyat 2016, 77). This line is evident in the production of the GB42 model so that in the era of the year, trawler enthusiasts are most interested in making this model. The GBY production design is the direct support that helps create all visual appeal, but there is no standard principle that determines the physical form of a product as this is usually determined by product properties, mechanical and engineering considerations. The design and engineering department in the GBY company is a part that must also synergize with marketing in designing a model. Buyers' interest in GBY ship production is not only in the appearance of the output, but many aspects of product function and usability. More increasing buyers' interest in a product design is from the technological aspect that supports the previous function aspects. If these two aspects are fulfilled, then the material aspect as a product wrapper is to add an aesthetic touch to the product to complete it to sustain its traditional form.

Figure 4. GB42 Sedan
Source: https://www.powerandmotoryacht.com/maintenance/myboatworks

Apart from the hull of the ship, which is the focus of aesthetics in building traditions, other parts are equally important in maintaining the traditional form, which has become a legend in the shipping world. GBY managed to do all of that. The materials used to result from a rigorous selection process, so the resulting quality is excellent. If the material used is the best, then for the designer is a significant advantage. This is because it can cut the creative process for designers who work day and night in producing GBY boat designs. This has an impact on the social satisfaction of the GBY boat owner. Relations in post-phenomenology help understand that technology is an integral part of understanding how relational ontology works. There are some simple examples of when technology, humans, and the world have an ontological relationship that can build both subjectivity and objectivity. The existence of FRP constitutes its user as its 'applied technology' and the GBY production vessel as an observable reality for its observers. Subject and object are not as realized entities, meaning that they are not as an existing entity given separately but instead constituted through a mediated technological relation (subject-object). The general understanding that technological relations are created is due to the interaction between humans and technology or technology and the world.

CONCLUTION

The main posthumanist result of GBY production is a reduction in the number of workers on the GBY production line being replaced by an FRP material processing machine. From a post-phenomenological point of view, the GBY production boat owner anywhere wants to look like he has experience of exploration in the past. Moreover, as a background, you want to look like Columbus! As the philosophy of GBY is built into each heritage series model, the wooden lines are designed to be more sophisticated in the FRP strokes. The result is a roaming product that

encompasses a taste: safe and comfortable, inspiring and exhilarating for anyone who uses it. This is a perfect collaboration between the sea and the environment around it and the technology applied. This is the main reason GBY has become a world shipping icon and why they continue to meet high standards of accommodating marine enthusiasts to this day.

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