Engineered Artifacts with Aesthetic Appeal: From Conceptual Design to Failure

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The forms of engineered artifacts have tended to reflect their function. For many of these artifacts, designers changed the form of the exterior shapes of these artifacts, often reflecting the then-current art movement. These artifacts include but are not limited to buildings, bridges, specialty structures, automobiles, electrical household appliances, electrical musical instruments, and so on. During conceptual design, the typical thinking is that the physical appearance of a given engineered artifact would enhance its value, usually adding to the profit or, for iconic artifacts, prestige and satisfaction of the public.

The SHOT community is likely aware that many historical engineered artifacts are time-proven aesthetic and technical successes. Examples include the Art Deco Empire State Building, the Victorian Crystal Palace, the Venetian Renaissance Ponte di Rialto (bridge), the 1939 Art Deco Lancia Astura IV Touring automobile (Italian), the late 1950s Pop Art curved-top refrigerator, the 1970s Contemporary Stratocaster Fender guitar, and so on.

However, some of the engineered artifacts have failed in two ways as a direct result of their designs. This topic contributes to an under-studied area in the broader scope of history of technology.

The first type of failure was in the marketplace. Although the technology employed in the engineered artifacts (whether new or tried-and-true) may have been sound, the artistic styles of the some of the artifacts were rejected by the public. One example is the 1958-1960 Ford Edsel auto-mobile that, in the public's collective eye, was ugly, among other displeasing attributes.

The second type was a technical failure that followed directly from constraints imposed by the overall design on the engineering. Although the designs of the engineered artifacts may have stood as icons and pleased the public, some of the decisions made during conceptual design were (1) not founded on available, pertinent knowledge, (2) developed while minimizing cost and markedly increasing risk, and/or (3) based on untried "innovations" that led to their failures. An example of Item (1) is the new Oakland Bay Bridge that exhibited fractured high-strength, large diameter steel rods, because decades-old published warnings on the dangers of galvanizing this material were unrecognized.

In each of these cases, design decision-making during conceptual design - the literal shaping of the artifacts - led to their failures, an aesthetic and financial one for the Ford Motor Company and a technical and financial one for the repair of the Oakland Bay Bridge.

Presenters and a Commentator are being sought for this Open Session in which examples of historical engineered artifacts failed as a direct result of decisions made during conceptual design. The failures can be either of the two types noted above. In addition, the failures can be either or both the design and technology used in the engineered artifact.

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Presenter submittals include proposals (one-page abstract of 500 words max and narrative resume of 300 words max) with your contact information by March 25 to jmcohen@jmcohenpe.com .
Commentator submittals: narrative resume of 300 words max as noted in previous line.