Review the article by McCall, Richards & Walters (1977). Select a timelier academic article on software quality. Discuss, in 300 words, the major differences in relation to software quality between the two articles.

Assessing the quality attributes and characteristics presented at a high-level in both papers reveals that modern software engineers are still striving superficially for the same outcomes (McCall et al., 1977; Klima et al., 2022). Below shows a table from McCall et al. where various quality attributes are listed. One can note the similarity in terms with modern goal characteristics.

PORTABILITY	AUGMENTABILITY
TRANSFERABILITY	INTEGRITY
ACCEPTABILITY	SECURITY
COMPLETENESS	PRIVACY
CONSISTENCY	USABILITY
CORRECTNESS	OPERABILITY
AVAILABILITY	HUMAN FACTORS
RELIABILITY	COMMUNICATIVENESS
ACCURACY	STRUCTUREDNESS
ROBUSTNESS	MODULARITY
EFFICIENCY	UNIFORMITY
PERFORMANCE	GENERALITY
CONCISENESS	REUSABILITY
UNDERSTANDABILITY	TESTABILITY
SELF-DESCRIPTIVENESS	INTEROPERABILITY
CLARITY	CONVERTIBILITY
LEGIBILITY	MANAGEABILITY
MAINTAINABILITY	COST
STABILITY	ACCOUNTABILITY
ADAPTABILITY	SELF-CONTAINEDNESS
EXTENSIBILITY	EXPRESSION
MODIFIABILITY	VALIDITY
ACCESSIBILITY	TIME
FLEXIBILITY	COMPLEXITY
EXPANDABILITY	
PRECISION	DOCUMENTATION
TOLERANCE	REPAIRABILITY
COMPATABILITY	SERVICEABILITY

Figure 1 – Quality Attributes Identified in 1977 (McCall et al., 1977)

However, if one considers the above attributes within a modern context the interpretation of each will change. For instance, security concerns have evolved drastically since 1977. Consider how the Internet has grown and the associated pervasiveness of connected devices. Additionally, the Common Vulnerabilities and Exposures (CVE) database has been developed in which many known concerns are documented. Therefore, the “Security” referred to is not equivalent to that expected in a modern sense. Moreover, “Modularity” would also be different, for example with the rise of object-oriented programming, code can be modularised at a different level.

Furthermore, consider “Testability”, with the various modern complexities of distributed computing the scope for testing has altered. Another major difference relates to the metrics used to quantify the fulfilment of the quality attributes. Modern techniques have sought to produce much more quantitative measurements.

References:

Klima, M., Bures, M., Frajtak, K., Rechtberger, V., Trnka, M., Bellekens, X., Cerny, T., Ahmed, B. (2022) "Selected Code-Quality Characteristics and Metrics for Internet of Things Systems," in IEEE Access, vol. 10, pp. 46144-46161, 2022, DOI: 10.1109/ACCESS.2022.3170475.

McCall, J., Richards, P., Walters, G. (1977) Factors in Software Quality, Concept and Definitions of Software Quality. General Electric Company.