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 TRANSFERABILITY ACCEPTABILITY ACCEPTABILITY ACCEPTABILITY COMPLETENESS CONSISTENCY CONSISTENCY CORRECTNESS AVAILABILITY RELIABILITY ACCURACY RELIABILITY ACCURACY ROBUSTNESS ROBUSTNESS EFFICIENCY PERFORMANCE CONCISENESS UNDERSTANDABILITY SELF-DESCRIPTIVENESS CLARITY LEGIBILITY MANAGEABILITY MAINTAINABILITY MAINTAINABILITY ADAPTABILITY ADAPTABILITY ACCESSIBILITY MODIFIABILITY ACCESSIBILITY MODIFIABILITY ACCESSIBILITY MODIFIABILITY ACCESSIBILITY TIME EXPRESSION MODICATION MODIFIABILITY ACCESSIBILITY ACCESSIBILITY FLEXIBILITY EXPANDABILITY EXPANDABILITY EXPANDABILITY EXPANDABILITY EXPANDABILITY FRECISION TOLERANCE COMPATABILITY SERVICEABILITY SERVICEABILITY SERVICEABILITY COMPATABILITY SERVICEABILITY SERVICEABILITY SERVICEABILITY SERVICEABILITY SERVICEABILITY SERVICEABILITY SERVICEABILITY		
ACCEPTABILITY COMPLETENESS CONSISTENCY CORRECTNESS AVAILABILITY RELIABILITY ACCURACY ROBUSTNESS ROBUSTNESS ROBUSTNESS ROBUSTNESS ROBUSTNESS REUSABILITY ONCISENESS REUSABILITY SELF-DESCRIPTIVENESS CLARITY LEGIBILITY MAINTAINABILITY ADAPTABILITY ADAPTABILITY ACCESSIBILITY MODIFIABILITY SELF-CONTAINEDNESS RESABLETY CONVERTIBILITY MANAGEABILITY MANAGEABILITY SELF-CONTAINEDNESS STABILITY ACCOUNTABILITY ACCOUNTABILITY ACCOUNTABILITY ACCESSIBILITY TIME EXPRESSION MODIFIABILITY TIME FLEXIBILITY EXPANDABILITY COMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE REPAIRABILITY	PORTABILITY	AUGMENTABILITY
COMPLETENESS CONSISTENCY CORSISTENCY CORSISTENCY CORRECTNESS AVAILABILITY RELIABILITY RELIABILITY ACCURACY ROBUSTNESS ROBUSTNESS EFFICIENCY PERFORMANCE CONCISENESS REUSABILITY CONCISENESS REUSABILITY SELF-DESCRIPTIVENESS CLARITY LEGIBILITY MAINTAINABILITY MAINTAINABILITY STABILITY ADAPTABILITY ADAPTABILITY MODIFIABILITY ACCESSIBILITY MODIFIABILITY ACCESSIBILITY TIME FLEXIBILITY COMPLEXITY COMPLEXITY ACCOMPLEXITY ACCOMPLEXITY ACCOMPLEXITY ACCOMPLEXITY EXPANDABILITY TIME FLEXIBILITY PRECISION DOCUMENTATION TOLERANCE REPAIRABILITY	TRANSFERABILITY	INTEGRITY
CONSISTENCY CORRECTNESS AVAILABILITY AVAILABILITY RELIABILITY ACCURACY ROBUSTNESS ROBUSTNESS ROBUSTNESS ROBUSTNESS ROBUSTNESS ROBUSTNESS REUSABILITY CONCISENESS REUSABILITY UNDERSTANDABILITY SELF-DESCRIPTIVENESS CLARITY CONVERTIBILITY LEGIBILITY MAINTAINABILITY STABILITY ADAPTABILITY ADAPTABILITY ACCESSIBILITY MODIFIABILITY ACCESSIBILITY ACCESSIBILITY TIME EXPRESSION MODIFIABILITY FLEXIBILITY COMPLEXITY COMPLEXITY ACCOMPLEXITY ACCOMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE REPAIRABILITY	ACCEPTABILITY	SECURITY
CORRECTNESS AVAILABILITY AVAILABILITY RELIABILITY RELIABILITY ACCURACY ROBUSTNESS ROBUSTNESS ROBUSTNESS EFFICIENCY PERFORMANCE CONCISENESS UNDERSTANDABILITY SELF-DESCRIPTIVENESS CLARITY LEGIBILITY MAINTAINABILITY STABILITY MAINTAINABILITY STABILITY ADAPTABILITY ADAPTABILITY ACCESSIBILITY ACCESSIBILITY FLEXIBILITY FLEXIBILITY EXPANDABILITY EXPANDABILITY COMMENTATION TOLERANCE OPERABILITY HUMAN FACTORS MODULARITY UNIFORMITY TESTABILITY CONVERTIBILITY MANAGEABILITY ACCOUNTABILITY TIME COMPLEXITY EXPANDABILITY ODOCUMENTATION TOLERANCE REPAIRABILITY	COMPLETENESS	PRIVACY
AVAILABILITY RELIABILITY COMMUNICATIVENESS ACCURACY STRUCTUREDNESS ROBUSTNESS EFFICIENCY PERFORMANCE CONCISENESS UNDERSTANDABILITY SELF-DESCRIPTIVENESS CLARITY LEGIBILITY MAINTAINABILITY STABILITY MAINTAINABILITY SELF-CONTAINEDNESS CONVERTIBILITY MAINTAINABILITY SELF-CONTAINEDNESS CONVERTIBILITY MAINTAINABILITY SELF-CONTAINEDNESS EXTENSIBILITY ADAPTABILITY ACCESSIBILITY ACCESSIBILITY FLEXIBILITY ACCESSIBILITY FLEXIBILITY FLEXIBILITY DOCUMENTATION TOLERANCE REPAIRABILITY DOCUMENTATION	CONSISTENCY	USABILITY
RELIABILITY ACCURACY STRUCTUREDNESS ROBUSTNESS MODULARITY EFFICIENCY PERFORMANCE CONCISENESS UNDERSTANDABILITY SELF-DESCRIPTIVENESS CLARITY LEGIBILITY MAINTAINABILITY MAINTAINABILITY STABILITY ADAPTABILITY ADAPTABILITY EXTENSIBILITY MODIFIABILITY MODIFIABILITY ACCESSIBILITY TIME FLEXIBILITY EXPANDABILITY EXPANDABILITY DOCUMENTATION TOLERANCE STRUCTUREDNESS MODULARITY UNIFORMATY TESTABILITY CONVERTIBILITY ACCOUNTABILITY EXPRESSION MODIFIABILITY FLEXIBILITY OUTPUT TIME COMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE	CORRECTNESS	OPERABILITY
ACCURACY ROBUSTNESS ROBUSTNESS HODULARITY EFFICIENCY UNIFORMITY PERFORMANCE GENERALITY CONCISENESS REUSABILITY UNDERSTANDABILITY SELF-DESCRIPTIVENESS INTEROPERABILITY CLARITY CCONVERTIBILITY LEGIBILITY MANAGEABILITY MANAGEABILITY MANAGEABILITY COST STABILITY ADAPTABILITY ADAPTABILITY EXPRESSION MODIFIABILITY ACCESSIBILITY TIME FLEXIBILITY EXPANDABILITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE DOCUMENTATION	AVAILABILITY	HUMAN FACTORS
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 EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE REPAIRABILITY	RELIABILITY	COMMUNICATIVENESS
EFFICIENCY PERFORMANCE GENERALITY CONCISENESS REUSABILITY UNDERSTANDABILITY SELF-DESCRIPTIVENESS INTEROPERABILITY CLARITY LEGIBILITY MANAGEABILITY MANAGEABILITY MANAGEABILITY ADAPTABILITY ADAPTABILITY ADAPTABILITY EXPRESSION MODIFIABILITY ACCESSIBILITY ACCESSIBILITY FLEXIBILITY EXPANDABILITY EXPANDABILITY PRECISION TOLERANCE UNIFORMITY TESTABILITY CONVERTIBILITY MANAGEABILITY ACCOUNTABILITY EXPRESSION VALIDITY TIME COMPLEXITY	ACCURACY	STRUCTUREDNESS
PERFORMANCE CONCISENESS REUSABILITY UNDERSTANDABILITY SELF-DESCRIPTIVENESS INTEROPERABILITY CLARITY LEGIBILITY MANAGEABILITY MANAGEABILITY MAINTAINABILITY STABILITY ADAPTABILITY ADAPTABILITY ADAPTABILITY ADAPTABILITY ACCESSIBILITY MODIFIABILITY ACCESSIBILITY ACCESSIBILITY TIME FLEXIBILITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE	ROBUSTNESS	MODULARITY
CONCISENESS UNDERSTANDABILITY SELF-DESCRIPTIVENESS INTEROPERABILITY CLARITY LEGIBILITY MANAGEABILITY MAINTAINABILITY STABILITY ADAPTABILITY ADAPTABILITY ADAPTABILITY MODIFIABILITY ACCESSIBILITY ACCESSIBILITY ACCESSIBILITY ACCESSIBILITY ACCESSIBILITY ACCESSIBILITY ACCESSIBILITY FLEXIBILITY EXPANDABILITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE	EFFICIENCY	UNIFORMITY
UNDERSTANDABILITY SELF-DESCRIPTIVENESS CLARITY CLARITY CLEGIBILITY MAINTAINABILITY MAINTAINABILITY STABILITY ADAPTABILITY ADAPTABILITY ADAPTABILITY MODIFIABILITY ACCESSIBILITY ACCESSIBILITY ACCESSIBILITY ACCESSIBILITY ACCESSIBILITY FLEXIBILITY EXPANDABILITY EXPANDABILITY PRECISION TOLERANCE TESTABILITY MANAGEABILITY ACCOUNTABILITY EXPRESSION VALIDITY TIME COMPLEXITY	PERFORMANCE	GENERALITY
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	CONCISENESS	REUSABILITY
CLARITY LEGIBILITY MANAGEABILITY MANAGEABILITY MANAGEABILITY COST STABILITY ADAPTABILITY ADAPTABILITY SELF-CONTAINEDNESS EXTENSIBILITY EXPRESSION MODIFIABILITY ACCESSIBILITY TIME FLEXIBILITY COMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE	UNDERSTANDABILITY	TESTABILITY
LEGIBILITY MAINTAINABILITY STABILITY ADAPTABILITY ADAPTABILITY SELF-CONTAINEDNESS EXTENSIBILITY MODIFIABILITY ACCESSIBILITY ACCESSIBILITY TIME FLEXIBILITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE MANAGEABILITY COST ACCOUNTABILITY EXPRESSION VALIDITY TIME COMPLEXITY	SELF-DESCRIPTIVENESS	INTEROPERABILITY
MAINTAINABILITY STABILITY ADAPTABILITY ADAPTABILITY SELF-CONTAINEDNESS EXTENSIBILITY EXPRESSION MODIFIABILITY ACCESSIBILITY TIME FLEXIBILITY COMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE TOUR ACCOUNTABILITY	CLARITY	CONVERTIBILITY
STABILITY ADAPTABILITY EXPRESSION MODIFIABILITY ACCESSIBILITY ACCESSIBILITY FLEXIBILITY EXPANDABILITY PRECISION TOLERANCE ACCOUNTABILITY EXPRESSION VALIDITY TIME COMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION REPAIRABILITY	LEGIBILITY	MANAGEABILITY
ADAPTABILITY EXTENSIBILITY MODIFIABILITY ACCESSIBILITY FLEXIBILITY EXPANDABILITY PRECISION TOLERANCE SELF-CONTAINEDNESS EXPRESSION VALIDITY TIME COMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION REPAIRABILITY	MAINTAINABILITY	COST
EXTENSIBILITY EXPRESSION MODIFIABILITY VALIDITY ACCESSIBILITY TIME FLEXIBILITY COMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE REPAIRABILITY	STABILITY	ACCOUNTABILITY
MODIFIABILITY VALIDITY ACCESSIBILITY TIME FLEXIBILITY COMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE REPAIRABILITY	ADAPTABILITY	SELF-CONTAINEDNESS
ACCESSIBILITY TIME FLEXIBILITY COMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE REPAIRABILITY	EXTENSIBILITY	EXPRESSION
FLEXIBILITY COMPLEXITY EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE REPAIRABILITY	MODIFIABILITY	VALIDITY
EXPANDABILITY PRECISION DOCUMENTATION TOLERANCE REPAIRABILITY	ACCESSIBILITY	TIME
PRECISION DOCUMENTATION TOLERANCE REPAIRABILITY	FLEXIBILITY	COMPLEXITY
TOLERANCE REPAIRABILITY	EXPANDABILITY	
10000000	PRECISION	DOCUMENTATION
COMPATABILITY SERVICEABILITY	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.