

IN NO UNCERTAIN TERMS

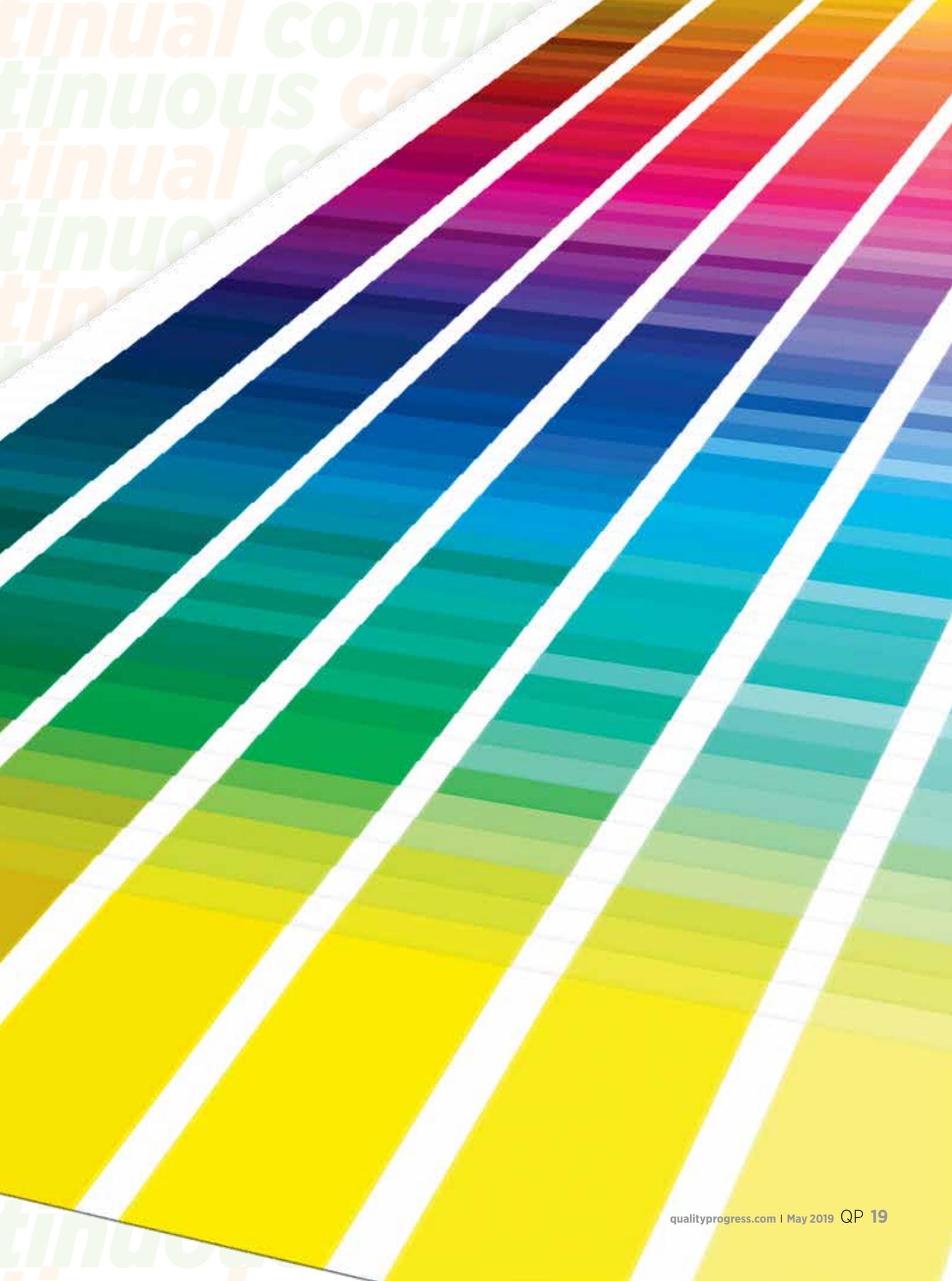
**Making the case for replacing the term
'continual improvement' with 'continuous
improvement' in the ISO 9000 series**

| by Michael F. Reber

Just the Facts

The author outlines the differences between the terms "continual" and "continuous," and argues that ISO standards should replace the term "continual improvement" with "continuous improvement."

Based on a clear understanding of what "continual" and "continuous" mean, the author proposes a new definition of "continuous improvement" to use in ISO 9000.



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When thinking about the terms “continual” and “continuous,” you could easily argue that a relative difference exists, as evidenced by the terms’ various definitions in Table 1. The main difference between the terms is time—in the definitions of “continual,” there are breaks in time. In the definitions of “continuous,” however, there aren’t.

In ISO 9000, the term “continual improvement” is used and defined as “recurring activity to enhance performance.”¹ Several other ISO standards outside of the ISO 9000 family, however, use the term “continuous improvement,” such as ISO/IEC Technical Report 29110-3-4:2015, a standard for systems and software engineering, which uses the term “continuous improvement cycle.”²

Additionally, ASQ’s Quality Glossary provides two definitions of “continuous improvement”:

1. **“Continuous improvement (CI):** Sometimes called continual improvement. The ongoing improvement of products, services or processes through incremental and breakthrough improvements.”³
2. **“Continuous quality improvement (CQI):** A philosophy and attitude for analyzing

capabilities and processes and improving them repeatedly to achieve customer satisfaction.”⁴

The automotive industry is closely aligned with ASQ’s definition of CQI, as stated by authors Jeffrey K. Liker and James K. Franz:

“Now let’s consider what continuous improvement means. It does not mean that the company values only small, incremental changes and avoids fundamental innovation. It does mean being committed to the ideal of improving continuously in every part of the organization. In reality, we know that doing so is impossible. At some times and in some places, we have to be just doing our jobs the way we did them the day before, and perhaps we even make mistakes that send us backward. In reality, continuous improvement is a vision, a dream, and no company in real life can possibly always get better.

“Witness the Toyota recall crisis. That hardly represented a leap forward. The leap forward should come as a result of the crisis as Toyota reconnoiters, reflects on what happened, and drives change throughout the enterprise. The key word there is throughout. Every part of the organization (sales, engineering, manufacturing, communications, government affairs, quality), down to the level of the working stiff, has to work actively at countermeasures to safety recalls and the resultant damage to the company’s image.”⁵

The ideals of continuous improvement extend far beyond that of modern Japanese management. In fact, its foundations can be traced to Hellenic Greece in the philosophy of self-actualization or, as renowned philosopher David Norton calls

In addition to continuous improvement’s philosophical antecedents, it has current roots in ISO standards.



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TABLE 1

Common dictionary definitions of continual and continuous

Dictionary	Continual	Continuous
Dictionary.com	adjective <ol style="list-style-type: none"> Of regular or frequent recurrence; often repeated; very frequent. Happening without interruption or cessation; continuous in time.¹ 	adjective <ol style="list-style-type: none"> Uninterrupted in time; without cessation. Being in immediate connection or spatial relationship.²
Merriam-Webster	adjective <ol style="list-style-type: none"> Continuing indefinitely in time without interruption. Recurring in steady, usually, rapid succession.³ 	adjective <ol style="list-style-type: none"> Marked by uninterrupted extension in space, time or sequence. Of a function: having the property that the absolute value of the numerical difference between the value at a given point and the value at any point in a neighborhood of the given point can be made as close to zero as desired by choosing the neighborhood small enough.⁴
Oxford	adjective <ol style="list-style-type: none"> Forming a sequence in which the same action or event is repeated frequently. Having no interruptions.⁵ 	adjective <ol style="list-style-type: none"> Forming an unbroken whole; without interruption. Forming a series with no exceptions or reversals. Mathematics (of a function) of which the graph is a smooth unbroken curve, i.e. one such that as the value of x approaches any given value a, the value of f(x) approaches that of f(a) as a limit.⁶

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it, eudaimonism.^{6,7} This philosophy holds that although a person will never reach his or her ultimate potential through the work that is his or hers to do, it is the journey to achieving that potential that defines the person. The journey is the purpose and meaning of a person's life.⁸

In addition to continuous improvement's philosophical antecedents, it has current roots in International Organization for Standardization (ISO) standards. Gary G. Jing—who serves on the U.S. delegation to ISO technical committee (TC) 176 and participated in the development of ISO 9000:2015 as the secretary of subcommittee 1/work group 1—used ISO's online browsing platform to determine the number of times "continuous" and "continual" are used in ISO standards. He found that "continuous improvement" is used three times more (900 times) than "continual improvement" (300 times).^{9,10}

Therefore, this article makes the argument for adopting the term "continuous improvement" in place of "continual improvement" in ISO 9000 based on three understandings:

- Continuous improvement has philosophical antecedents.
- Continuous improvement is more prevalent than continual improvement in the ISO community.
- A common definition of "continuous improvement" must be applied in the ISO community.

First, let's look at the philosophical foundations of the concept of continuous improvement and juxtapose it with continual improvement.

Roots of continuous improvement

The concept of continuous improvement has its roots in the school of thought referred to as self-actualization ethics, or eudaimonism. Eudaimonism holds that each person is unique and should discover who he or she is to actualize his or her true potential and live the "good life" in the congeniality

TABLE 2

Three-lens view of organizational systems

Lens	Definition
Systems/environment model (bird's-eye view)	View of the general environment and the systemic environment
Functions/structure model (snapshot view)	View of an organizational system at a certain point in time
Process/behavioral model (motion picture view)	View of an organizational system as it operates through time

and complementarity of personal excellences of his or her fellow community members.^{11,12}

This actualization of true human potential is attained through what is called “work” in a eudaimonistic sense. Norton contends that work is not an activity done merely to satisfy a utilitarian economic agenda or an activity people hate to do even though it must be done to survive.¹³ Work is essential to the unity of life. In the first instance, “a person is irredeemably and essentially a future to be made present, a potentiality to be progressively actualized, and it is this task of actualization that furnishes the term ‘work’ with its profound meaning.”¹⁴

In the second instance, work is the activity that makes a person whole. When a person is doing the work that is his or hers to do in life, that person’s past, present and future merge. Wherever in time we find a person doing work, we should find that person living life as he or she decides it should be lived in alignment with his or her being. A person’s past actions build on the work of present actions, and present actions build on the work of future actions. This is what is meant by “the unity of a life.”

Liker and Franz are commensurate in this thought by their definition: “[Excellence is] a pursuit rather than as an absolute value. If we improve, we’re closer to excellence than we were before. The highest levels of performance give us a vision of excellence that provides a direction for our efforts—a ‘true north.’”¹⁵

Hence, continuous improvement always is about consistent value-creation for oneself, one’s organization, one’s customers and society—a consistent value-creation that is evaluated using the tools of organizational systems design science.

One of the reasons the U.S. technical advisory group (TAG) to ISO/TC 176 adopted the term

“continual” and not “continuous” is because the regulatory community argued that continuous improvement was unenforceable, as cited by author J.P. Russell:

“In the late 90s, the pros and cons of using continuous or continual improvement in the proposed ISO 9001:2000 were discussed (debated). In a [TAG] to the American National Standards Institute for ISO/TC 176 meeting (ISO 9000 quality management system oversight group): It was agreed to use continual instead of continuous because the regulatory community (sector) believed that continuous improvement was unenforceable. They felt that continuous was unenforceable because it meant an organization had to improve minute by minute, whereas, continual improvement meant step-wise improvement or improvement in segments. The ISO/TC 176 members yielded to the needs of the regulatory representatives and changed the wording from continuous to continual. The use of continual versus continuous improvement was simply a more acceptable word choice for the international standard. Any distinction between the two words is not supported by dictionary definitions or the ISO 9000:2000 vocabulary standard.”¹⁶

Russell implies that regulators based their argument on the dictionary definition of “continuous improvement” that implies an organization improves minute by minute, whereas an organization improves incrementally under continual improvement.

In addition, it appears the regulatory community does not cite the field of organizational systems design science because Russell states regulators assumed that tools did not exist to evaluate and enforce compliance of the ISO 9000 and 9001 family of standards.

A cursory review of the field of organizational systems design science reveals that the very issue of evaluating continuous improvement was addressed nearly three decades ago. Basic foundational textbooks include Bela Banathy’s *Systems Design of Education: A Journey to Create the Future*,¹⁷ *A Systems View of Education: Concepts and Principles for Effective Practices*¹⁸ and *Designing Social Systems in a Changing World*.¹⁹

Regulators based their argument on the dictionary definition of “continuous improvement” that implies an organization improves minute by minute, whereas an organization improves incrementally under continual improvement.

In organizational systems design, three lenses are used to evaluate whether an organization’s systems activity is continuous or continual—bird’s-eye view, snapshot view and motion picture view (see Table 2).

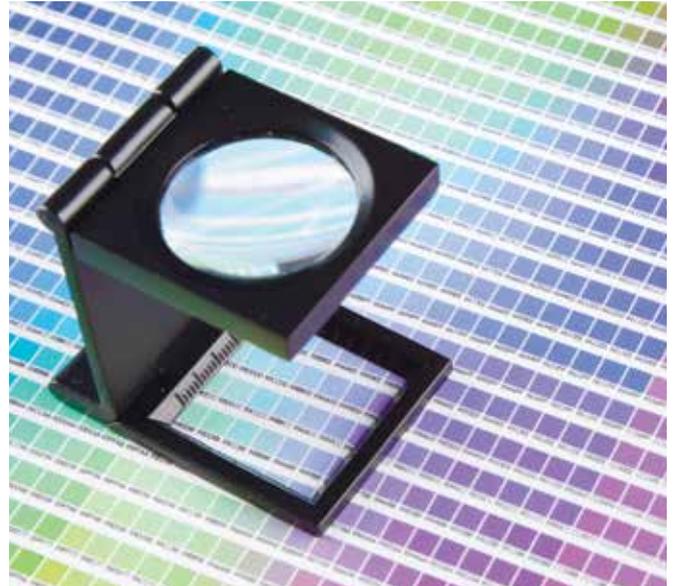
That being said, it is necessary for the ISO regulatory community to consider the discipline of organizational systems design science to better understand the meaning of continuous improvement. Continuous improvement is a reality that happens in global manufacturing organizations and, with the advent of artificial intelligence and robotic factories operating 24/7, 365 days a year, continuous improvement will be even more embedded in manufacturing.

Definition of continuous improvement

Based on the concept of continuous improvement, the following working definition of the term can be used for ISO 9000: “The consistent and constant state of moving process improvements throughout an organization toward ever-higher holarchical levels of value creation.”

To better understand this definition, let’s break it down into its parts:

- + “Value creation” means the creation of value that has utilitarian and self-actualizing purposes for people to enjoy. In other words, when something is created for society to value, such as a cup, it has utilitarian and self-actualizing purposes. It is a utility in that the purpose of a cup is to serve as a vessel in which to hold liquid from which one may drink. It is self-actualizing in that many cups are made and appreciated as craft and art, such as Wedgwood teacups and saucers.
- + “Toward ever-higher holarchical levels” means intertwined levels of increasing complexity as an organization evolves, in which parts and systems act as holons. A holon is a part and a whole of a system. The term “holarchy” was coined by author Arthur Koestler.²⁰



Furthermore, in his renowned *General System Theory: Foundations, Development, Applications*, Ludwig von Bertalanffy states a system is a unified entity “consisting of parts ‘in interaction’” or “‘organized complexity’ ... circumscribed by the existence of ‘strong interactions’ or interactions which are ‘nontrivial.’”²¹

He further states that we are open systems, meaning that life—especially human life—“is not maintenance or restoration of equilibrium but is essentially maintenance of disequilibria” because “reaching equilibrium means death and decay.”²²

- + “Throughout an organization” means what Liker and Franz stated earlier: “Every part of the organization (sales, engineering, manufacturing, communications, government affairs, quality), down to the level of the working stiff, has to work actively ...”²³
- + “State of moving process improvements” means the condition in which an organization’s people and processes facilitate improvements in the organization. *ISO 10018:2012—Quality management—Guidelines on people involvement and competence*²⁴ is a good source on this.
- + “Constant” means improvement that occurs without interruption over a period of time. When we think in terms of global manufacturing organizations, they are constantly improving 24/7, 365 days per year.
- + “Consistent” means improvement done according to set standards or norms. It is not enough to have constant improvement—improvement also must be consistent in alignment with standards, such as ISO standards and guidelines.



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What do you think about replacing “continual improvement” with “continuous improvement” in the ISO 9000 series? Start a discussion about it at my.asq.org. Sign in with your [asq.org](http://my.asq.org) account and go to the *Quality Progress* board.

A humble attempt

It is evident that the U.S. TAG to ISO/TC 176 must revisit the term “continuous” for ISO 9000. Even the U.S. Food and Drug Administration (FDA) on its “Voluntary Medical Device Manufacturing and Product Quality Pilot Program” webpage states that: “The goal of these appraisals is to drive continuous improvement and organizational excellence among participating medical device manufacturing sites.”²⁵

Furthermore, the FDA’s “MDSAP QMS Continual Improvement (CI) Procedure” references the terms “continual improvement” and “CQI,”²⁶ a clear recognition that a distinction exists between continual and continuous in the FDA’s audit program for medical devices.

Therefore, if the term “continuous improvement” is adopted for ISO 9000, it should be defined with some influence from the field of organizational systems design to capture a holistic meaning that can be applied throughout the entire ISO community, not just ISO/TC 176.

The definition of “continuous improvement” presented earlier—“the consistent and constant state of moving process improvements throughout an organization toward ever-higher hierarchical levels of value creation”—is a humble attempt at accomplishing this goal.²⁷ 

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