A System to Assess Coffee Value

Understanding the Specialty
Coffee Association's Coffee
Value Assessment

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About This Document

This document was originally conceived as the "beta version" of what will eventually become the new coffee value assessment protocol, anticipated to replace the 2004 SCA Cupping Form and Protocol in 2024 after a broader testing during the 2023 early-adopter program. However, given that some assessments have progressed through the development process more quickly than others—and that this is such a long document—the assessments and the protocols outlining their use will become a series of separate provisional standards for ratification by the SCA's Standards Development Panel.[1]

As this document will become a series of future SCA standards, the way in which it is organized and written adheres to some of the guidelines set out by the International Standards Organization (ISO), which includes the early establishment of terms and definitions (sections 3.1, 3.2, and 3.3). It also applies a particular sentence structure logic, where "shall," "should," and "may" all have distinct meanings: "Shall" indicates a statement is mandatory and must be followed exactly as prescribed; "should" indicates a recommendation; and "may" indicates the existence of an option.

However, the SCA recognizes that these future standards—by nature of the same guidelines set by the ISO—will not contain any additional context around their development history or their underpinning logic. To this end, the SCA will continue to revise and adapt this longer and overarching version of the system's emerging protocols as a key contextual document. It is anticipated that the contents of this document will eventually be integrated into a second edition of the SCA's *Coffee Sensory and Cupping Handbook*.

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1   "Coffee Standards," *Specialty Coffee Association*, accessed March 20, 2023, https://sca.coffee/research/coffee-standards

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About the System

1. Introduction

When Clarence E. Bickford added a coffee tasting to his coffee grading protocol in the 1800s, it was somewhat of a revolution in coffee trading. Ideas of coffee quality had been based predominately on physical attributes (like size), but certain coffees, thought of as inferior because of their small size had better flavor than their larger counterparts.[2] Although "cupping" (as it would come to be known) was largely restricted to green coffee traders and roasters, the early advent of the specialty coffee movement in the mid-1970s—prioritizing quality and freshness—brought renewed interest to the practice.[3] In 1984, Ted Lingle's *The Coffee Cupper's Handbook* brought another revolution to coffee sensory analysis. It integrated approaches and ideas from the burgeoning field of sensory science, including a systematized and rigorous approach to coffee tasting.[4] This was later codified, beginning in 1999, as the first Specialty Coffee Association (of America) Cupping Protocol and Scoring System. This system sought to quantify coffee quality using a multi-part form and mathematical scoring model inspired by the wine industry's 100-point scoring system.[5]

Today, the practice of cupping remains a valuable method for discovering and cataloguing valuable attributes, particularly those related to a coffee's intrinsic sensory attributes. As the specialty coffee industry has progressed and matured, a wider range of attributes—particularly extrinsic attributes (like geographical identity information, processing information, certification credentials, or producer stories)—have become increasingly valuable in the marketplace. Sometimes, "cupping notes" (relegated to a small box on the 2004 cupping form) now contain information about a coffee that is discovered in other ways, such as the results of a coffee's physical evaluation or extrinsic attributes like third-party certifications. Under the 2004 cupping paradigm, however, most of this information is inadvertently obscured through the adoption of a single, numeric score used to articulate a coffee's quality and value in contracts.

To this end, the SCA has been working on a long-term project to evaluate, expand, and evolve the 2004 cupping protocol into a more holistic coffee value assessment system, which provides a full, detailed picture of a specialty coffee and the attributes for which it is valued. Through the development of four separate assessments (physical, sensory descriptive, affective, and extrinsic), this system simply expands upon the work of Bickford and Lingle by offering additional opportunity to capture and identify important information about a coffee. This will result in a clear and transparent record to assist in value discovery for all parties.

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2   Dr. Mario R. Fernández-Alduenda and Peter Giuliano, *Coffee Sensory and Cupping Handbook* (London: Specialty Coffee Association, September 2021), 13.
3   Fernández-Alduenda and Giuliano, *Coffee Sensory and Cupping Handbook*, 14.
4   Fernández-Alduenda and Giuliano, *Coffee Sensory and Cupping Handbook*, 14.
5   Fernández-Alduenda and Giuliano, *Coffee Sensory and Cupping Handbook*, 14.

1.1 The Evolution of Cupping

As both consumer enjoyment and the industry's understanding of coffee's value largely depend on sensory attributes (i.e., the aroma, fragrance, flavor, aftertaste, mouthfeel, and sweetness of a coffee), the method for coffee quality evaluation relies heavily on sensory assessment as a key activity for decision-making along the chain. "Cupping"—formerly known as "cup testing"—was designed as a simple way to experience a coffee, recognize its physical and sensory attributes, and use that information to drive purchasing and other decisions.[6] Although the practice of "cup testing" predates the discipline of sensory science, the coffee industry's incorporation of sensory science tools into the practice has helped it to improve and understand cupping. The existing SCA cupping system is a globally recognized industry standard used by many stakeholders across the globe. Over the years, it has become a common language to describe and assess coffee quality along the chain and around the world, whether or not its users are active members of an SCA community.[7] The standard that underpins the system was designed to distinguish specialty grade from commercial coffees, but even as the reach of specialty coffee—and coffee cupping—has expanded, the standard has not been thoroughly investigated or updated since 2004.

The SCA initially engaged in an evaluation process that spanned three years and encompassed a literature review and multiple user research projects. Throughout this process, the SCA refined its attributes-based definition of how specialty coffee is recognized and rewarded in the marketplace.[8] From this new definition, the evolution of the 2004 cupping protocol into a coffee value assessment system that better reflects this interpretation of specialty coffee began to emerge. The new system to assess value includes not only taste quality, as the 2004 SCA Cupping System primarily emphasized, but other attributes that differentiate specialty coffees, including sustainable growing practices.

After producing alpha and beta versions of the new system's various assessments, the SCA released these versions for piloting in prototype testing with several groups of cuppers as well as seeking broad early adopter feedback through the use of a perpetually open survey tool. Additionally, a group of trainers and ambassadors joined staff in hosting training and informational sessions in different locations, collecting insights, feedback, and questions from prospective users about each of the assessments in the process. This provisional version of the Coffee Value Assessment protocol, released in June 2024, reflects amends integrating this broad review process of the beta version (released in April 2023).

Previously, cupping was sometimes seen as such a specialized skill that only one or two people in a business might cup coffee regularly. However, more recently, cupping has become a more inclusive practice, offering a way to spread understanding of a coffee and its value throughout an organization or along a

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6   Specialty Coffee Association, T*he Value of Specialty Coffee Cuppers: Perspectives, Roles, and Professional Competencies* (Specialty Coffee Association, April 2023).

7   Specialty Coffee Association, *Understanding and Evolving the SCA Coffee Value Assessment System: Results of the 2020–2023 Cupping Protocol User Perception Study and Proposed Evolution* (Specialty Coffee Association, August 2022).

8   "Cupping: A Coffee Value Assessment System," *Specialty Coffee Association*, accessed March 20, 2023, https://sca.coffee/value-assessment

supply chain. It is the SCA's view that specialty coffee cuppers are highly skilled, not just as "tasters," but as subject-matter experts who may discover, support, ensure, and communicate the quality of coffee while acting as key market linkages within the coffee value chain.[9] Although still in development, the transition from cupping protocol to value assessment system will expand all specialty coffee actors' capacity to identify, improve, and report valued attributes within coffee's complex system.

1.1.1 VOICES FROM THE INDUSTRY

As a part of the project to evaluate the 2004 cupping system, the SCA undertook several research projects aimed at understanding how the form and protocol were being used and perceived by the broader community. A survey of over 1,500 global cupping system users explored the frequency, context, and technical elements of use. This was complemented by a series of semi-structured qualitative interviews with "super users" of the system.[10] Respondents were generally positive about the cupping system as a tool for price discovery and a common language within the industry. However, they also remarked that this only works if users are well trained. Those respondents who either used the form frequently or were located more closely to coffee's production activities were positively correlated with positive sentiment about the system. When asked about "subjectivity" and "objectivity" within the form, respondents were split—but this reflects our new understanding of the 2004 SCA Cupping System as a jumble of sensory tests (see 1.1.2.). Roughly half the respondents felt the form was mainly subjective, with the other half categorizing it as mainly objective, and a few were at either extreme. Respondents referenced the concept of "inter-subjectivity," i.e., that cuppers are able to reflect the preferences of specific population groups or markets. This suggests that cuppers' results do not reflect an objective reality nor each cupper's individual preferences.[11]

Across sections and functionality, respondents identified multiple key areas and opportunities for improvement across both the form and protocol. Many also raised concerns that any small change could affect the livelihood of a producer or group and requested a considered approach to its evolution.[12]

1.1.2 THE EVOLUTION OF SENSORY SCIENCE

Advances in sensory science frame the "objectivity" or "subjectivity" question faced by cuppers with the 2004 SCA Cupping System as two separate and distinct sensory tests. Analytical quality measurements, like taste intensity or body level, are understood as objective (i.e., trainable with sensory references such as the *World Coffee Research Sensory Lexicon*). Value judgement (like grade, preference,

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9   SCA, *Value of Specialty Coffee Cuppers*.
10   SCA, *Understanding and Evolving the SCA Coffee Value Assessment System*.
11   Dr. Jorge Berny and Dr. Mario Fernández-Alduenda, "How Do Cuppers Cup? Evaluating and Evolving Elements of the SCA Cupping Protocol," *25, Issue 18* (Specialty Coffee Association, October 15, 2022), https://sca.coffee/sca-news/25/issue-18/how-do-cuppers-cup-evaluating-and-evolving-elements-of-the-sca-cupping-protocol
12   SCA, *Understanding and Evolving the SCA Coffee Value Assessment System*.

liking, or acceptability) is subjective.[13] In the 2004 SCA Cupping Form, these kinds of tests are mixed alongside several "discriminatory" (yes/no) sensory tests. This explains why the form's users were so split as to whether or not the form was subjective or objective.

Additional research was conducted collaboratively with World Coffee Research and the Coffee Science Foundation. This research sought to understand how the cupping protocol was being used by cuppers to determine (or assign) value through their scoring. It also sought to "road-test" a split in descriptive and affective sensory tests.[14] The initial study, conducted in 2021–2022, showed that cuppers are able to act as reliable and consistent sensory descriptive panelists. However, it also suggests that personal preferences among cuppers can impact how a cupper will evaluate coffees, with two distinct clusters of preference identified among those participating.[15] Under this new paradigm, a cupper's scores wouldn't be thrown out simply because they're an outlier or do not conform to a group of cuppers' preferences. Their preference is not wrong, especially if they can clearly articulate what they like and value.

1.2 Understanding Specialty Coffee Based on Attributes

If the goal of a value assessment system is to help actors discover a coffee's quality, attributes, or value, we first needed to begin by defining how these concepts are understood in today's specialty coffee industry.

Any product, including coffee, has different kinds of attributes, which may be valuable for the potential user or buyer. Some of these attributes are intrinsic to the product. In the case of coffee, examples of intrinsic attributes could include its chemical composition, physical properties and appearance, and sensory properties, namely flavor. Some attributes are extrinsic, meaning we cannot discover them from the product itself but need additional information. Examples of extrinsic attributes in the case of coffee include traceability and certification information about the coffee lot: where it was produced, by whom and how; what variety it is; how it was processed; what is its relationship with the environment, with the humans along the chain and with the economics along the chain; and many others.

A potential buyer could value some of these attributes more than others. For some, perhaps a coffee is most valuable if it shows unique flavor or specific flavor characteristics. For others, perhaps a coffee is most valuable if we can be sure the farmer was paid a fair price, if carbon was captured during its production, or if it was produced in a bird-friendly environment. Thus, the same coffee could be highly valuable for one person and have very little value for another person.

This is why the SCA now defines specialty coffee descriptively, as it currently is recognized and rewarded in the marketplace, rather than through a singular lens of green grading or a cupping score. This updated, more nuanced definition—

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13   Berny and Fernández-Alduenda, "How Do Cuppers Cup?".
14   Berny and Fernández-Alduenda, "How Do Cuppers Cup?".
15   Berny and Fernández-Alduenda, "How Do Cuppers Cup?".

"specialty coffee is a coffee or coffee experience that is recognized for its distinctive attributes, resulting in a higher value within the marketplace"[16]—is applicable across a wide range of coffees and coffee experiences, but also facilitates measurement and research.

2. The Value Assessment System: At a Glance

In 2020, when the SCA began to review the 2004 SCA Cupping System, it was clear that the definition of "specialty" underpinning the system did not reflect current industry practices. Any reengineering of the former system would need to be built upon the new, attributes-based definition (see 1.2). Across the many projects undertaken during the "evaluate" phase of this multi-year project, three key evolutionary objectives were identified: enhanced usefulness for the community; congruency with sensory science; and transparency in the approach to discover a coffee's value for a specific market actor by offering a way to compare the attributes of a specific coffee with the desirable attributes outlined by a buyer.

To this end, the value assessment system offers a complete, "high-resolution" picture of a specific coffee across four assessment types: physical, descriptive, affective, and extrinsic. Each of these assessments should be completed separately to avoid bias when assessing the intrinsic attributes during the physical and descriptive assessments: as tasters and cuppers can be easily biased if they are given access to extrinsic information about the coffee.

Once all assessments have been completed, the system acts as a value discovery tool. By comparing the attributes in the coffee being assessed with those that have been identified as valuable and sought after by the buyer, there is a clear and transparent record to assist in value discovery for both the selling and buying parties.

2.1 Using the Assessments

In the **physical assessment** (section 4), users record intrinsic attributes like a green coffee's color, defects, moisture content, and size. These activities and their results must be kept separate and concealed from any sensory assessment activities or actors to avoid bias. The physical assessment is still currently in research and development, but this document outlines a basic approach to this type of assessment, including an alpha version of the associated form (Appendix 12.5).

In the sensory **descriptive assessment** (section 7), users objectively record intrinsic sensory attributes. These are analyzed along the tasting sections termed fragrance, aroma, flavor, aftertaste, acidity, sweetness, and mouthfeel. These attributes are described with the aid of the sensory references from section 15, through the use of "check-all-that-apply" (CATA) sensory tests, intensity scales,

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16   Specialty Coffee Association, *Towards a Definition of Specialty Coffee: Building an Understanding Based on Attributes* (Specialty Coffee Association, September 2021), https://sca.coffee/sca-news/just-released-new-sca-white-paper-towards-a-definition-of-specialty-coffee

and space for freely elicited descriptors. All sensory assessment activities should be completed without any identifying information about the coffee. The provisional form of the descriptive assessment (Appendix 12.1), which has been submitted to the SCA's Standards Development Panel (SDP) for ratification, is available for use. This version is anticipated to be adopted as the SCA Standard in 2024-2025, replacing the 2004 SCA Cupping Form.

In the **affective assessment**, or impression of quality assessment (section 8), users record subjective information about a taster's impression of quality or preferences. Using the same tasting sections of the sensory descriptive assessment, tasters apply a 9-point impression of quality scale to reflect either their own preference or a well-known market preference. They then score their impression of quality for the coffee "overall." This assessment is also used to record cups with "sensory defects," which are distinct from physical defects identified in the physical assessment. This is because some sensory attributes which were previously considered undesirable have since become accepted—and even sought after—in some markets (8.4). The provisional form of the affective assessment (Appendix 12.2), which has been submitted to the SCA's SDP for ratification, is available for use. This version is anticipated to be adopted as the SCA Standard in 2024-2025, replacing the 2004 SCA Cupping Form.

In the **extrinsic assessment** (section 9), users record informational or symbolic attributes that contribute to a specialty coffee's value. These include (but are not limited to) coffee identity (like location of origin or producer information); processing information; the coffee's grade; product certifications; or other information, like a coffee's "story." This is an activity that seeks to list any extrinsic attributes that may make a coffee interesting to buyers in the marketplace. To avoid introducing bias, no assessors who are undertaking the physical, sensory descriptive, or affective assessments should compile this information until *after* those assessments have been completed. Extensive research, across the coffee industry as well as outside of it, has shown the impact of extrinsic attributes on both our sensory perception and our impression of quality. A beta form of the extrinsic assessment (see Appendix 12.4) is now available for use following a period of research and development on an alpha version in 2023.

Information gathered across any completed assessments may then be used as a **value discovery tool** by comparing the attributes recorded during each assessment to the attributes desired or needed.

2.2 Descriptive and Affective: Separate or Combined?

The system is made up of different assessments, and the SCA strongly advocates for the separation of these tests in line with sensory science best practice to avoid bias. As a result, one of the most common questions received during the piloting process was: "Is it possible to combine some assessments, the way the previous cupping form did, or do I need to perform each assessment separately?"

In some cases, it is not practical to carry out separate descriptive and affective assessments. For those cases, a combined form is provided. (See Appendix 12.3, the combined value assessment form, which includes the descriptive, affective, and basic extrinsic assessments.) The combined form is useful when users do not have the time (or the coffee) to carry out separate cuppings, in the understanding that some resolution will be lost, compared to separate assessments where cuppers can fully focus on each. Although the best sensory practice is to do separate assessments, the research during the pilot phase showed that cuppers are almost as accurate when using the combined form as they are when performing separate cuppings.

When using the combined form, users should first complete the descriptive assessment of each cupping section before starting the affective assessment of the same section. (That is, they should complete the descriptive side of the fragrance section, before completing the affective side of the fragrance section, and apply this method to all sections.) Once both assessments have been completed for a given section, users may move on to the next section. This is a better practice than completing the descriptive assessment in full for the combined form before starting the affective assessment, as the taster's perceptions are fresher in memory. If they intend to also note any extrinsic attributes or identifying information about the coffee beyond the sample number, they should do so only after both the sensory descriptive and impression of quality assessments have been completed in full. This separation of assessment activities, or the discrete task approach, even if it is done on a per-section basis, is a key element of new cupping mechanics to minimize bias between descriptive sensory assessment, extrinsic attribute information, and preferences (as captured in the impression of quality, or affective, assessment).

This does not mean that all assessment types must be done for a single coffee every single time as it moves through the value chain from one party to another. Just as cupping has become a more inclusive practice that offers a way to spread understanding of a coffee and its value through an organization, or along a supply chain, some assessments may be more useful to some actors than others. In general, we believe the descriptive assessment will be the most widely used of all the assessments across the value chain. We hope that it, along with the extrinsic attribute assessment, will replace the singular, one-dimensional "cupping score" in contracts.

The affective assessment is likely to be used more by those who need to understand the preferences of their potential markets or customers, or even by cuppers themselves to better understand their own preferences. In this case, a producer, importer, exporter, or roaster may send multiple samples for which they have already completed the sensory descriptive assessment to a variety of potential buyers and ask them to complete an affective assessment for each sample. When reviewed in conjunction with the descriptive assessment, it will provide valuable insight into which attributes are rewarded most and by whom.

3. Terms and Definitions

3.1 General Terms

Attribute(s). A property that is characteristic of something; a quality or feature regarded as a characteristic or inherent part of a coffee. A product (or coffee) can be thought of as a collection of attributes. Well-defined attributes can be identified using a variety of methods.

Affective assessment. For the case of this protocol, a sensory assessment that focuses on discovering the impression of quality of a coffee, for the various sections of the coffee cupping and as an overall. It responds to questions such as "how much do I like this coffee?" and "does this sensory profile match the preferences of a market segment known to me (or for another person)?"

Combined assessment. For the purpose of this protocol, a sensory assessment where both descriptive and affective assessments are done in parallel, but separately for each section.

Descriptive assessment. A sensory assessment that focuses on profiling and characterizing the sensory attributes of coffee objectively. It responds to questions such as "what does this coffee taste like?" or "what is the sensory profile of this coffee?"

Extrinsic attribute. Also known as "informational" or "symbolic" attributes, extrinsic attributes are qualities or features *about* a coffee. For example, this includes a coffee's place of origin, the name of the producer, or any certifications it might carry as well as branding, stories, or claims.

Extrinsic assessment. A descriptive activity that focuses on profiling and characterizing the informational or symbolic attributes of coffee objectively. It responds to questions like "what information do I know about this coffee, beyond its physical and sensory information?"

Intrinsic attributes. Attributes related to the material reality of a coffee: its form and appearance, its chemical makeup, and the sensory properties that derive from these material constituents. Also known as "material attributes."

Physical assessment. An assessment that focuses on green coffee beans' intrinsic properties like size, color, moisture content, and defects. For the purposes of this document at the time of writing, this assessment only applies to washed arabicas.

Specialty coffee. A coffee or coffee experience recognized for its distinctive attributes, and because of these attributes, has significant extra value in the marketplace.

3.2 Cupping Terms

Cupping. A method for the sensory assessment of coffee, which involves tasting several cups per coffee sample, using a different set of coffee beans for each cup, which is ground and brewed independently. The purpose of a cupping may be to do a descriptive assessment, an affective assessment, or both (combined).

Cupping step. One of the three main activities carried out during a cupping: fragrance assessment, brewing, and liquoring. Each step assesses one or more cupping sections.

Cupping section. Each of the categories that integrate the coffee tasting experience and are assessed during a cupping, from either the descriptive or affective point of view. See 6.1.

Brewing. For this protocol, to add hot water to the coffee grounds in each cup individually at a specific coffee-to-water ratio, and let it infuse for about 3 minutes, prior to "breaking the crust." See 5.3.

Brew. The coffee beverage or coffee infusion after brewing.

Breaking the crust. The act of stirring the "crust" or "dome" of coffee slurry usually formed on the top of the cup during brewing, as one of the steps to ready the cup for liquoring.

Skimming. The act of removing the floating grounds, foam and oils which remain on the surface of the brew after breaking the crust, to ready the cup for liquoring.

Liquoring. The act of tasting the brew several times as it cools down, to assess the cupping sections corresponding to the coffee experience inside the mouth. This is usually done by slurping the brew from a spoon, assessing it in the mouth, and then ejecting the brew from the mouth.

Alignment. When a group of tasters agrees on the affective "impression of quality" score within a cupping section, attribute, or total impression. Since "alignment" is used in an affective context, and affective scores are subjective, affective alignment reflects a concept called "inter-subjectivity." See 8.2, 11.4.

Impression of quality. A coffee taster's opinion of the distinctiveness and desirability of a coffee cupping section, reflecting either their own preference or a known market preference. See 8.2.

Intensity. The perceived strength of a sensory stimulus in a descriptive category or cupping section. Intensity does not imply quality or desirability. For example, fragrance intensity is the perceived strength of the odor of the dry coffee grounds, as a single perception.

Physical defect. A material property of the green or roasted coffee beans that is broadly seen as negative. Physical defects are perceived visually in the "Physical Assessment" of the CVA. See 4.3.

Sensory defect. An aromatic or gustatory property of the coffee that is broadly seen as negative. Sensory defects are evaluated through tasting in the "Affective Assessment" of the CVA. See 8.4.1.

Roasting problem. A deviation from the protocol which happens when roast batches do not fall in the desired roast level range or present underdeveloped, burnt, or baked characteristics. The presence of roasting problems has a potential sensory impact on the coffee's flavor and impression of quality, thus introducing noise to the test.

3.3 Sensory Terms

Gustative. Referring to the sense of taste, just as "visual" refers to the sense of sight and "olfactory" to the sense of smell. The main physiological structure of the sense of taste is the set of tastebuds.

Olfactory. Relating to the sense of smell. The human olfactory system consists of the nose, the nasal cavities, and the "olfactory bulb" in the brain, which processes information from the olfactory receptors lining the nasal cavities.

Orthonasal. One of two entryways of odor molecules into the human olfactory bulb, the orthonasal passageway is through the nose, as we breathe in, and is how we pick up the odor from the environment.

Retronasal. One of two entryways of odor molecules into the human olfactory bulb, the retronasal passageway is from the back of the mouth cavity, as we breathe out, and is how we pick up the olfactory component of flavor.

Tactile. Referring to the sense of touch. In this case, it refers to the "mouthfeel" or tactile sensations within the mouth in response to the coffee stimulus: weight, texture, pungency, etc.

Tests and Mechanics

4. Physical Assessment of Green Coffee

4.1. Overview

"Physical assessment of green coffee" is a term encompassing the tests done to coffee in the green coffee state (the hulled, unroasted, coffee seed). Like sensory results, the results from physical evaluation are considered intrinsic attributes, as they can be measured on the product itself. Physical assessment results are, thus, part of a thorough evaluation of coffee with the purpose of value discovery. However, physical assessment activities shall be held separately to any sensory assessment activities, and results from physical assessment shall be concealed from tasters until after sensory evaluation is completed, to avoid bias.

New research is needed[17] to reassess the impact of green bean defects and other physical parameters of green coffee on coffee quality, in the light of recent advancements in both the industry and coffee science. For example, the most current reference on this topic is *The Washed Arabica Green Coffee Defect Guide* (the *Defect Guide*), originally published by the SCA in 2004,[18] which only applies to washed arabicas and not to the wide variety of processing methods and of coffees consumed today.

Until additional research can be conducted and integrated into a more thorough physical assessment for a wider variety of green coffee, the physical assessment procedure described here still only applies to washed arabicas and largely mirrors the *Defect Guide*,[19] with some exceptions, summarized below:

1. Water activity of green coffee and quaker count are not required physical tests.
2. Moisture testing shall be done with moisture meters calibrated against ISO 6673.

Table 1 summarizes the tests included in the physical evaluation of green coffee, with the resulting parameters and their units.

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17 If you are interested in sponsoring research about green coffee evaluation, please contact the Coffee Science Foundation or participate in the CVA's Patron program.

18 Specialty Coffee Association of America, *Arabica Green Coffee Defect Handbook* (Long Beach, CA: Specialty Coffee Association of America, 2004).

19 Specialty Coffee Association, *The Washed Arabica Green Coffee Defect Guide* (Specialty Coffee Association, 2018).

Table 1 Summary of Physical Assessment Tests for Green Coffee

Test	Parameter	Unit
3.2 Color	Color	Categorical
3.3 Defects	Category 1 defects	Full defect equivalents
	Category 2 defects	Full defect equivalents
3.4 Capacitive determination of moisture	Moisture	Percentage in wet basis
3.5 Bean size	Bean size distribution	Percentage of beans by mass on each screen

Reported results of defect count, moisture level, and bean size should be noted and, if desired, compared against a product quality standard.

4.2. Color

Using a black mat as background, a 350 g sample of green coffee shall be compared visually against the color guide on page 3 of the *Defect Guide*, to classify the predominant color of the sample as blue-green, bluish-green, green, greenish, yellow-green, pale yellow, yellowish, or brownish.

4.3. Physical Defects

Mirroring the method in the *Defect Guide*, a 350 g sample of green coffee shall be used. Using a black mat as background, all the beans in the sample shall be visually examined, one by one. The beans meeting the criteria in the *Defect Guide* (pages 6–35) shall be separated and grouped by defect type. The full defect equivalents of each physical defect type are calculated based on the number of beans of each defect per full defect equivalent, as described on the table of defect equivalents (Table 2). Full defect equivalents of each type are rounded down to the nearest integer. The full defect equivalents of each category (category 1 and category 2) are added up and reported by category.

Table 2 Defect Equivalents

Category 1 Defective Beans	Full Defect Equivalent	Category 2 Defective Beans	Full Defect Equivalent
Full black	1	Partial black	3
Full sour	1	Partial sour	3
Dried cherry / pod	1	Parchment / pergamino	5
Fungus damaged	1	Floater	5
Foreign matter	1	Immature / unripe	5
Severe insect damage	5	Withered	5
		Shell	5
		Broken / chipped / cut	5
		Hull / husk	5
		Slight insect damage	10

4.4. Capacitive Determination of Moisture

A moisture-content measuring instrument based on capacitance shall be used to test moisture in green beans. For replicability across the industry, the instrument shall be calibrated against moisture data obtained using the method in ISO 6673.[20] The sample used shall depend on the type of instrument. Replicate measurements (3–5) should be performed. The results are reported in percentage of moisture in wet basis.

4.5. Bean Size

The bean size distribution of green coffee shall be characterized using the sieving method. The screen aperture is round and expressed in 1/64ths of an inch (i.e., screen #13 has an aperture of 13/64 in). The most-used sieves are #13 through #19, though larger or smaller aperture screens may be used.

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20 ISO, International Standard, Green coffee: determination of loss in mass at 105 degrees C, ISO 6673:2003. This is a method for determining loss in weight at 105°C for green coffee. A forced convection oven is used, set to a temperature of 105°C ± 1°C. Whole coffee beans (10 g) are placed in aluminum crucibles and put inside the oven to dry for 16 hours ± 0.5 h.

5. Sample Preparation and Cupping Mechanics

The coffee industry has used *cupping* as a technique to assess green coffee since the 19th century. Strictly speaking, the term *cupping* refers to the brewing technique, where several cups per sample are prepared individually, and the coffee beans for each cup are ground separately, so that the uniformity of the different cups' flavor is taken as an indication of the uniformity of the green coffee lot preparation. Though other brewing techniques (such as batch-brewing) could be, and sometimes are, used to assess coffee descriptively, cupping—with individual brewing of each cup—has become the universally accepted technique within the industry for affective assessment, because of both tradition and the technique's capacity to assess a lot's uniformity.

A computer's hardware and software analogy can be used to understand cupping, and to explain how cupping can evolve to adapt to the needs of the 21st century, while the preparation technique remains essentially unchanged. A cupping's "hardware" would be represented by the technique's "mechanics"—in other words, its operations and procedures to prepare the green coffee samples for tasting and to carry out the tasting itself. A cupping's "software" would be represented by the assessment methods and criteria to either describe a coffee's flavor or determine an impression of quality. The cupping "hardware," or mechanics, can be learned in a short time, but coffee assessment skills and criteria (the "software") are developed by a cupper over a long period of time as they become exposed to a wide variety of coffees and learn about the desirability or undesirability of attributes in different situations.

This protocol honors the traditional cupping mechanics (or "hardware"), though the assessment methods and criteria are greatly evolved from the approach of the 19th and 20th centuries. The cupping mechanics have been kept unchanged for the most part, both to honor our industry's centuries-old tradition and to keep a simple approach to assess a green coffee lot's uniformity, through individual cup brewing. This section therefore covers the "hardware" aspect of cupping. As cupping is a technique designed to assess green coffee lots, green coffee needs to be roasted, ground, and brewed (sample preparation) in order to taste it. This brewing method allows for coffee to be assessed along different steps or "sections" of the process. Though the approach to assess coffee along the different sections can look very different in descriptive and affective assessments, the different cupping steps usually remain the same.

5.1. Sample Preparation

Sample preparation encompasses the steps needed to bring the green coffee to a state where it's ready to be assessed and brewed. This includes roasting, weighing, and grinding. It is possible to prepare samples of coffee in other states (i.e., parchment, dry cherry, etc.), but that procedure is outside the scope of this protocol.

5.1.1. ROASTING

The roasting step implies subjecting the coffee beans to a thermal treatment to bring about different physical and chemical changes in the bean and ultimately develop the coffee flavor. The roasting step is highly complex, and individual contexts may be very different regarding the roasting technology available, amount of coffee sample, purpose of the roasting, and other variables. Without attempting to cover all potential situations, general guidelines regarding sample roasting are given here.

The purpose of sample roasting is to achieve the desired roast level while avoiding "roasting problems," and to keep roasting conditions and parameters as even as possible for all samples. Different roasting technologies and roasting conditions are permitted, as long as this purpose is accomplished.

Roast Level

The roast level may be controlled through four alternative methods: colorimetry (e.g., CIELAB or Agtron/SCA Roast Color Classification System), infrared spectrometry (e.g., Agtron device), dry matter loss, or volume increase of the coffee bean.[21] Some of these parameters may be better suited for certain contexts. The recommended roast level for specialty coffee cupping has mostly been described as "medium." If, for whatever reason, the coffee is cupped at a roast level other than medium, or any other deviation from this protocol occurs, such deviation should be reported to all parties involved (i.e., producers, etc.), for the sake of transparency.

Table 3 lists the different reference values of brightness (or L* in the CIELAB system) and disc number (in the Agtron/SCA Roast Color Classification System) for "medium roast," as reported by different authors.

Table 3 Reference values for "medium" roast level

| Studies Reference | COLOR | |
	CIELAB coordinates (L* = Lightness)	Agtron/SCA Roast Color Classification system
Azeredo, 2011	17–29	55–65
Córdoba et al., 2021	26–29	–
Franca et al., 2009	26–27	–
Vignoli et al., 2014	24	55
	27	60
	28	65
Farah et al., 2005	–	65
Batali et al., 2020	–	54

When using special roast meters, many of which use infrared spectrometry, the measurement accuracy is usually higher than when using other methods. However,

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21   The SCA is working to research the correlations among those parameters, and more accurate guidelines will
      be available in the future.

the scales used by the different roast meters are arbitrary, and even if the same scale is used, sometimes different brands will not completely correlate. When using roast meters, parameters such as the grind level and the coffee temperature should be controlled. It should be considered that samples with a lot of chaff will show a larger error. Table 4 lists the target reading for cupping roast level using different brands of roast meters.

Table 4 Target readings of cupping level roast for different roast meters

Instrument or Scale	Target reading at cupping roast level
Agtron "Gourmet"*	63.0
Agtron "Commercial"	48.0
Colorette 3b by Probat	96.0
Colortrack:	62.0

(*) Many other instruments have adopted the Agtron "Gourmet" scale, in which case the same target should be used. Such instruments include among many others Dipper KN-201, Javalytics, LightTells CM-100 and CM-100 plus, RoAmi (TRA-3000), RoastRite, X-Rite PANTONE RM-200 COFFEE.

Avoiding Roasting Problems

Assuming the roast level of the coffee falls within the targeted range, roasting "problems" should be avoided, as they will have an impact on the coffee's flavor and impression of quality and introduce "noise" to the test. The two most common roasting problems happen when roasting is either too fast or too slow (compared to the "optimum" roasting rate given by a specific roasting technology). "Too fast" roasting implies the center of the bean will not have enough time to develop compared to the surface of the bean. In other words, the surface of the bean will appear much darker than the inside. This will impact flavor, as the beans will show a large gradient of roast levels internally. "Too slow" roasting will result in the so-called "baked" bean, where the structure of the bean becomes brittle and the overall flavor and aroma intensity becomes subdued, often with "grain" notes. Unfortunately, to the best of our knowledge, there are no simple measurements to control for these problems across different roasting technologies and coffee types. However, cuppers may be trained to detect these problems by assessing the beans' structure, gradient of colors, and flavor.

Roast batches that do not fall in the desired roast level range or which present underdeveloped, burnt, or baked characteristics should not be used for cupping, and the roast batch should be repeated.

Consistency and Other Considerations

Assuming the objective of cupping is to assess green coffee samples, the effect of roasting on the variability of coffee flavor should be minimized, so that flavor variability is due to the variations among green coffees and not due to the differences in roasting conditions. Small changes in roasting parameters may have a dramatic effect on coffee flavor. Therefore, for the sake of fairness towards green coffee samples, all roasting parameters should remain as constant as possible from sample to sample. In other words, sample roasting is not about "bringing out the best possible flavor" of each coffee, as different roasting parameters for

each coffee would introduce too much variability to learn about the green coffee samples as they are.

For that reason, all controllable conditions and parameters—such as roaster unit, sample size, load temperature, power, final roast level, cooling time, and resting time—should be kept as constant as possible across samples, especially when they will be tasted in the same session. It is not advisable to shift the power during each roast, as we cannot guarantee all samples will receive an equivalent treatment. Therefore, a constant power level throughout the roast and across all roasts is best when roasting similar coffees for a given session. If the variation among samples in terms of bean density or moisture content is too great to have good results with a single set of conditions, it is advisable to categorize the samples in two or three groups and use the same roasting conditions within each group. This minimizes the "noise" from the roasting operation.

In some situations, especially when the amount of coffee required for cupping is larger than the roaster's capacity, it may be necessary to roast several small batches and combine them. In situations where both descriptive and affective assessments will be done separately on the same sample, the coffee used for both assessments should come from either the same roasting batch or the same combination of multiple batches, so that the roast for both assessments remains the same.

The coffee sample should be immediately air-cooled (without water quenching). When they reach room temperature (approximately 20°C), completed samples should then be stored in airtight containers or non-permeable bags until cupping. This minimizes exposure to air and prevents contamination. Samples should be stored in a cool, dark place.

Coffee should rest for 8 to 24 hours after roasting. The purpose of this is to allow for the coffee to degas. If the cupping cannot take place at 8 to 24 hours after roasting, measures should be taken to minimize flavor degradation.
The procedure described here applies for green coffee evaluation. In instances where the descriptive assessment is used to characterize a roasted coffee product, the roasting step does not apply.

5.1.2. WEIGHING AND GRINDING: AFFECTIVE ASSESSMENT

For the affective assessment, the *cupping* method is recommended. In coffee cupping, several cups are brewed from the same coffee sample. The coffee beans are ground separately for each cup, meaning each cup is brewed from a distinct set of coffee beans. The purpose of this is to ascertain the uniformity of the coffee lot using the flavor uniformity across all the cups from the same sample as an indicator of lot preparation uniformity. As each cup receives a different set of beans, a uniform flavor across the cups indicates a high uniformity of the beans within the lot. Conversely, one or more cups with a different flavor would indicate a certain level of non-uniformity among the beans of the lot. This approach is also useful to estimate the extent of impact from defective beans. The number of

defective cups, when present, is an indication of the prevalence of defective beans in a given amount of sample. See the brewing considerations for descriptive and affective assessments (5.3) for the recommended number of cups per sample to be tasted in each situation.

As each cup is brewed individually in coffee cupping, the specifications of the cups or cupping vessels are important. Cupping vessels shall be of tempered glass or ceramic material. They shall be between 200 mL and 350 mL, with a top diameter of between 75 mm and 90 mm. All cups used shall be of identical volume, dimensions, and material of manufacture, and have lids.

The mass of coffee beans to be used per cup is determined by the total volume of the specific cup model. The volume of the cupping vessel to the rim should be determined to calculate the mass of coffee to be used. The simplest way to do that is to weigh out the mass in grams of room-temperature water held by the vessel when it is filled to the rim, and approximate the volume using a density of 1 g/mL water. For example, if the cup holds 250 g of room-temperature water when filled to the rim, a capacity of 250 mL is estimated for such cup.

Once the cupping vessel volume is measured, the mass of coffee per cup is calculated at a ratio of 8.25 g of coffee per 150 mL of vessel capacity. For the sake of brewing simplicity, this is not calculated as a coffee to water ratio, but as a ratio of coffee mass to total vessel capacity, for each cup shall be brewed by adding water to the rim, instead of measuring the water mass. For example, for a cupping vessel with a capacity of 240 mL, a target mass of 13.20 g coffee beans shall be used (240 mL/150 mL * 8.25 g). The beans for each cup shall be weighed separately, using a scale with 0.1 g or higher accuracy. Due to the mean mass of a coffee bean, a tolerance of ±0.2 g is needed. For example, this means that for the 240 mL capacity cups, a mass of 13.0–13.4 g of whole coffee beans will be weighed out separately.

The sample shall be ground as close to the cupping as possible. Samples should be covered between grinding and brewing.

Each cup shall be ground separately. The coffee used for cupping shall be ground so that 70–75% of the grinds pass through the 20 US standard mesh sieve (850 µm aperture); this is slightly coarser than typically used for paper filter drip brewing. The person preparing the samples should adjust the grinder at the required grind prior to grinding the coffee for a session, and grind a small amount of coffee for each cup, to displace the coffee grounds from prior samples from the grinder.

5.1.3. WEIGHING AND GRINDING: DESCRIPTIVE ASSESSMENT

The descriptive assessment does not look at a coffee's uniformity. For that reason, the cupping approach is not required for the descriptive assessment, though it may be used if the assessor so decides. Batch brewing, using either filter brewing or French press, may be used for the descriptive assessment. In that case, a brew ratio of 55–60 g of coffee per liter of water is recommended, unless the descriptive assessment is used for specific brewing applications outside of this range. The grind should be specific to the brewing method chosen (e.g, French press). A small amount of dry coffee grounds from each sample shall be kept aside for tasters to assess the coffee's fragrance.

5.2. Cupping Steps and Sections

Regardless of the type of assessment (descriptive or affective), similar steps and sections are followed (the "hardware" of a cupping) as the coffee is brewed and assessed. This text section describes the cupping steps for the affective assessment and how they can be adapted for batch brewing in the case of the descriptive assessment. The cupping *steps* are operations followed during the cupping procedure, while the cupping *sections* are abstract categorizations of the sensory perceptions along the cupping procedure (e.g., "fragrance"), in order to break down the whole sensory experience into smaller sections that can be better analyzed.

Step 1 – Prior to brewing, and *fragrance* assessment

As soon as it is practical, the *fragrance* of the samples should be evaluated by sniffing the dry grounds. The odor of the dry coffee grounds from each cup is assessed. This odor of the dry grounds is the *fragrance* section, which is purely olfactive.

In the case of descriptive assessment, a separate cup or tray with the dry grounds shall be made available for tasters to assess the fragrance.

Step 2 – Brewing and *aroma* assessment

Immediately following fragrance assessment, the coffee should be brewed (see 5.3). Hot water is poured to the rim of each coffee, and a "dome" or "crust" of coffee and water slurry is formed on top of each cup. The aroma of the undisturbed crust is assessed, and the crust is left unbroken for at least three minutes but not more than five minutes. Breaking of the crust is done by stirring the crust three times, while the vapors released by this motion are sniffed and assessed. Both assessments (of the unbroken crust and during the break) constitute the *aroma* section, which is also purely olfactive.

Starting at the crust break and throughout the whole cupping, spoons shall be rinsed before they touch the brew in any cup. This is done to avoid carrying over

brew from one cup to the other, which might contaminate a cup with another cup's flavor.

When there is more than one cupper assessing the coffee sample, cuppers should split the cups among themselves, so that different cuppers can have the chance to break at least one cup's crust from as many samples as possible.

Once all the cups' crusts on a table have been broken, the grounds and oils on the surface of each cup are skimmed, using one or two spoons. The grounds and oils are discarded.

In the case of descriptive assessment, if batch brewing is used, each taster may receive a cup or, alternatively, several tasters may "cup" from the same set of batch-brewed cups. At any rate, there is no crust-aroma assessment and no crust breaking when batch brew is used, though the aroma should still be assessed from the freshly brewed coffee.

Step 3 – Liquoring rounds as the brew cools down

After each cup has been skimmed, the brew is allowed to cool to about 70°C before "liquoring" begins. "Liquoring" means assessing the brew in the mouth, for which a spoonful of brew from each cup is slurped into the mouth in such a way as to cover as much area as possible, especially the tongue and upper palate. The brew is assessed in the mouth regarding the different cupping sections, and it is then ejected from the mouth, to avoid swallowing too much caffeine in a cupping session. Different rounds of liquoring (at least three) should be done to assess the different cupping sections as the coffee cools down below body temperature. The following sections are assessed during this step:

1. *Flavor* is the composite perception coming from the brew's gustative and retronasal olfactory perceptions, while the brew is held in the mouth. It has, thus, a gustative and a retronasal dimension.
2. *Aftertaste* is the composite perception of gustative and retronasal olfactory perceptions coming from the brew's residues in the body once the brew has been ejected from the mouth (or swallowed). It has, thus, a gustative and a retronasal dimension, as well as a length in time.
3. *Acidity* refers to the gustative perceptions structured around the brew's sourness.
4. *Sweetness* refers to the gustative or retronasal perception of sweetness in the brew.
5. *Mouthfeel* refers to the tactile feel of the brew, comprising its heaviness (viscosity), texture and other tactile sensations, such as astringency (mouth-drying sensation).
6. *Overall* refers to the holistic perception of the coffee, as a combination of all prior sections.

When batch brewing is used for descriptive assessment, tasters should liquor the coffee from one or several cups. It is recommended to keep the technique of slurping from a spoon (unless the brew is swallowed), to facilitate retronasal perception.

5.3. Brewing and Cupping Mechanics

A cupping session involves the cupping of several coffee samples (usually 3–6) arranged on a table, where each sample is cupped following the steps in 5.2. All coffee samples on the table are brewed and cupped *in parallel*, which means step 1 is done for all the coffees on the table, next step 2, and finally step 3. The recommended surface for cupping tables (for six people) is of at least 0.90 m2. Cupping tables shall be a comfortable height for cuppers. The cupping table shall be stationary, and cuppers shall move around the table.

As the coffees are assessed in parallel, working with more than six coffees per session becomes too demanding for cuppers, especially beginners, in terms of level of attention and sensory fatigue. Many coffees per session means cuppers will dedicate less attention and detail to each coffee. Rapid cupping of many samples per session for quality control or quick decision-making purposes is outside the scope of this protocol, as the level of detail required for this protocol decreases beyond six coffees per session. At six coffees per session and six cuppers per table, each cupper gets to be in front of a sample, while other cuppers are tasting the other samples.

Having a ratio of one cupper per coffee sample in each session is also helpful for other reasons: all coffee samples on the table can be brewed at the same time, with each cupper pouring water in one sample's cups using one carafe per person, which assures a more even brewing across all the coffees on the table. If the cupping lab does not have enough carafes to brew all coffees individually, there should be at least one large carafe for every three coffees. All the cups of each coffee are brewed in sequence. Using a spouted carafe, water at 93 ± 3ºC is poured into each cup to the rim, gently creating turbulence as the water is poured.[22] It is important to fill up to the rim, as the vessel's capacity is calculated to the rim. A "dome" or "crust" of coffee and water slurry will be formed during brewing. If there were errors during the brewing process and some cups are short of volume, some extra water may be added to those cups after the crust has been broken, to adjust to the same volume of the other cups.

The characteristics of the water used for cupping greatly impact the coffee sensory attributes. Whenever possible, water for cupping should comply with the specifications in the "acceptable range" column of Table 5.

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22   The said range of temperatures is necessary to account for high-elevation locations, which are common in coffee-producing countries.

Table 5 Specifications of Water for Cupping

Characteristic	Acceptable Range
Chlorine	None
Calcium Hardness	50–175 ppm $CaCO_3$
Alkalinity	At or near 40–70 ppm $CaCO_3$
pH	6–8

The descriptive assessment does not include a "uniformity" category, which means the number of cups per sample is not fixed, and any number of cups between three and five cups per coffee may be used for descriptive assessments. When batch brewing is used for the descriptive assessment, an alternative approach would be to give one cup of coffee of each sample to each taster. The number of cups may be given by the number of cuppers tasting on each table and the size of the cupping vessels: more cuppers require more volume of brew, which may be given by larger vessels or a larger number of cups.

For the affective assessment, five cups per coffee (per table) shall be used so that the "uniformity" category can be evaluated consistently.

If the combined assessment is used, five cups per sample shall be used. As the combined assessment requires more detail, cuppers using the combined form should reduce the number of coffees per session, to allow time for the more thorough assessment.

Cuppers may choose to modify the protocol to avoid direct contact of the brew with each cupper's mouth. To do this, spoons would not be used to liquor the coffee from the cupping vessel. Instead, each sample has a designated spoon, which is used to transfer the coffee from the cupping vessel to a personal vessel (another spoon or a shot glass), from which the cupper would slurp the sample. Regardless, the spoon shall be rinsed in hot water every time, before being dipped in each cupping vessel.

6. Tasting Definitions and References

6.1. Cupping Sections

Cupping sections are, for the most part, aspects of the coffee-tasting experience, which is split in parts, for the purpose of analysis, either along time or based on the different sensory modalities involved.

Fragrance. The orthonasal olfactory perception of the coffee grounds prior to brewing, i.e., the smell of the coffee grounds. See 5.2. Assessed in step 1: fragrance assessment.

Aroma. The orthonasal olfactory perception of the coffee brew, assessed at two moments: right after brewing and while the crust is broken (i.e., the smell of the brew). See 5.2. Assessed in step 2: brewing.

Flavor. The perception coming from both the taste of the brew and the brew's retronasal olfactory component, while the brew is in the mouth. It is perceived as a single "flavor" impression, as the brain combines the different sensory inputs. See 5.2 and 5.3. Assessed in step 3: liquoring.

Aftertaste. The perception coming from both the taste and the retronasal olfactory component caused by the remnants of the brew inside the mouth and throat, after the brew has been ejected or swallowed. It is perceived as a single impression, as the brain combines the different sensory inputs. See 5.2 and 5.3. Assessed in step 3: liquoring.

Acidity. The perception of sour taste provoked by the brew, which may vary in intensity and character. See 6.4. Assessed in step 3: liquoring.

Sweetness. The perception of gustatory or retronasal sweetness provoked by the brew.[23] Assessed in step 3: liquoring.

Mouthfeel. The tactile perception of the brew while it is in the mouth, excluding the temperature perception. It encompasses the brew's weight and viscosity, its texture, and other tactile properties such as astringency (mouth-drying property). See 6.5. Assessed in step 3: liquoring.

Overall. Referring to the affective assessment, this is the general impression of quality of a coffee, including aspects not covered in the other sections, such as balance and personal preference. Assessed at the end of a cupping, to account for the whole tasting experience.

Uniformity. Referring to the affective assessment, where it is rated as number of non-uniform cups, this is an indicator of the coffee lot's homogeneity. See 8.4.2. Assessed in step 3: liquoring.

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23   Research is underway so that we can give a more concise definition of coffee sweetness.

6.2. Olfactory Category Examples

The descriptive assessment includes the use of olfactory category example references meant to illustrate the CATA descriptors used in the protocol. Each of these descriptors are examples of a larger group of descriptors in the *Coffee Taster's Flavor Wheel*, built upon the *World Coffee Research Sensory Lexicon* (*WCR Sensory Lexicon*). For example, "floral" is exemplified by Le Nez du Café #12 – "Coffee Blossom" (among other suggested examples), but the *Flavor Wheel* includes Black Tea, Chamomile, Rose, and Jasmin as the notes belonging to the "Floral" category. The user would use the reference as an example of the whole category, so that the CATA selection is accurate.

If the user wishes to further train their descriptive skills in order to elicit the most accurate note, we recommend the references listed in the *WCR Sensory Lexicon* or similar references available in the user's country. As not all lexicon sensory references are readily available in some areas of the world, we have taken care to compile a broader set of category examples that could be used to represent each larger group of descriptors in the wheel. At any rate, the idea is it is not necessary for all tasters to use exactly the same reference, but for them to get a general idea or representative example of each *Coffee Taster's Flavor Wheel* category. The category examples are conceived to be used orthonasally, for training and alignment purposes.

For a full list of category examples, please see Appendix 15.

6.3. Taste References

The following taste references illustrate each taste modality qualitatively. For references of specific intensities, please see the *WCR Sensory Lexicon*.

Salty. 0.15% sodium chloride solution (use refined table salt).
Sour. 0.015% citric acid solution.
Sweet. 1.0% sucrose solution (use white sugar or refined sugar).[24]
Bitter. Dark roasted coffee (about Agtron #35).
Umami. 1.0% solution monosodium glutamate (MSG).

6.4. Acidity Terms

Acidity is usually considered one of coffee's most important sensory attributes. However, though the intensity of sourness is easy to understand, with organic acid solutions of various intensities (see 7.2), the acidity's character or quality is not easy to express. Unfortunately, we have no sensory references for terms such as "juicy acidity" or "bright acidity," and the use of organic acids as references tends to be misleading, as coffees often have a mixture of many different organic acids.

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24 Research is in progress to determine if sweetness in coffee is gustatory or actually from a cross-modal perception of sweet-smelling compounds.

Misleadingly, a coffee with a so-called "phosphoric acid" profile could have very little phosphoric acid compared to coffees with a different profile. In other words, if you think you are tasting malic acid because the acidity reminds you of green apple, there is a good chance it is not malic acid. Another problem with acidity descriptors is that fruit similes are often used. Some people say "this coffee tastes like green apple" when they mean the acidity resembles that of a green apple, not that there are green apple notes in the retronasal flavor. For that reason, using fruits to express a coffee's acidity is not a very good practice, unless you specify that you are talking about acidity and not retronasal flavor.

The beta version of the CVA's Descriptive Assessment (April 2023) introduced two CATA boxes for "Dry acidity" and "Sweet acidity." Although this worked well for a fraction of the early users, the lack of sensory references grounding these new terms caused some confusion for others. With very little scientific research to offer sensory references for these terms, or to generally support the inclusion of these specific descriptors in an acidity CATA, the provisional standard (June 2024) removes them. Therefore, cuppers shall use this section to describe the character of a sample's acidity using only freely elicited descriptors.

Some descriptors recommended, although not scientifically proven, include: juicy, fruit-like, bright, tart, sharp, winey, vinegary, herbal, grassy, dry, etc. Some of these terms, although common in certain cupping traditions, do not translate to other languages.

6.5. Mouthfeel Terms

The concept of body, which includes both the brew's weight in the mouth and its texture, has been here expanded to "mouthfeel," to include other tactile sensations such as astringency and "metallic feel." This is a category that is not fully covered by the *WCR Sensory Lexicon*, which is why some terms outside the lexicon have been added.

Rough (Gritty, Chalky, Sandy). The feel of very small particles in the brew, exemplified by ibrik/cezve coffee.

Oily. The feel of the brew's oils in the mouth, exemplified by coffee with a small amount of butter. This texture can also be exemplified by that of butter or cream, from the mouthfeel point of view.

Smooth (Velvety, Silky, Syrupy). A smooth texture in the mouth, exemplified by a syrup.

Mouth-drying. A drying, puckering, or tingling sensation on the surface and/or edge of the tongue and mouth. Exemplified by alum solution (see *WCR Sensory Lexicon*).

Metallic. An aroma and mouthfeel associated with tin cans or aluminum foil. Exemplified by potassium chloride solution (see *WCR Sensory Lexicon*).

Assessments

7. Descriptive Assessment

7.1. Overview

The descriptive assessment is a new addition to the activity of cupping. As the survey about the SCA Cupping Protocol showed in 2021, the specialty coffee industry assigns much more importance to descriptive information or a coffee's "sensory profile" than it did one or two decades ago. A coffee's descriptive profile is important in several situations: to determine if the coffee fits required profile or style specifications; to discover unique or special sensory attributes; to showcase a coffee's "flavor notes" along the chain all the way to consumers; or to distinguish coffees that could numerically score the same but for vastly different reasons.

The presence of "flavor notes" on so many coffee packages indicates the importance of conveying descriptive information to consumers. With the advent of the "Processing Revolution,"[25] we could say the importance of descriptive information has surpassed that of the cupping score in many situations. The 2004 cupping protocol had a very superficial approach to descriptive information. "Notes" about the coffee were freely elicited by cuppers and written on the form, sometimes as general notes and sometimes under specific cupping sections. Yet cuppers were rarely required to systematize their notes in any way, including the notes' structure or terminology. What is more, a cupper could deliver a cupping form with little or no descriptive notes whatsoever, as long as the cupping score was explicit. This led to some extreme situations in which a coffee received extremely high or low scores with no descriptive justification.

However, for years cupping education has included training in descriptive sensory assessment, with the customary use of sensory references in standard cupping courses. Virtually every coffee cupper in today's industry has received some kind of descriptive sensory training. Thanks to descriptive training, as several studies in the last decade have shown, coffee cuppers are perfectly capable of producing reliable descriptive information, even comparable to that of descriptive panels.[26] Recent pilot tests of the descriptive assessment illustrated here, conducted by the SCA, have confirmed that professional cuppers are able to produce reliable descriptive results after a few hours of training.

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25   Dr. Mario Fernández-Alduenda, "Finding Your Way Around in the Processing Revolution," Presentation delivered at the SCA's Green Coffee Summit, August 26, 2021, published January 21, 2022, https://sca.coffee/sca-news/video/green-coffee-summit/finding-your-way-around-in-the-processing-revolution-mario-fernndez Joel Shuler, "Paradigm Shift: The Post-Harvest Processing Revolution," Presentation delivered at the SCA's Re:co Symposium, April 6, 2022, published October 15, 2022, https://sca.coffee/sca-news/watch/video/paradigm-shift-the-post-harvest-processing-revolution

26   Fernandez Alduenda, M. R. "Effect of Processing on the Flavour Character of Arabica Coffee", PhD thesis, University of Otago, New Zealand, 2015. Wilson, T., Lusk, K. A., Fernandez Alduenda, M. R., and Silcock, P. Research into the flavour profile of natural coffee, New Zealand Institute of Food Science & Technology (NZIFST) conference, Palmerston North, New Zealand, June 30 to July 2, 2015 [poster presentation]. Fernandez Alduenda, M. R., Lusk, K .A., Silcock P., and Birch, E. J. (2014). Descriptive Cupping: a rapid coffee flavour profiling method using the Specialty Coffee Association of America (SCAA) cupping protocol, Association for Science and Information on Coffee (ASIC) 2014 Conference, 8–13 September, 2014, Armenia, Colombia [oral presentation]. Unpublished research by the Specialty Coffee Association, done in 2022.

Descriptive analysis methods seek to generate an objective and quantitative representation of a product's sensory character. Their output can be correlated with other layers of information, such as impression of quality, or specific factors or variables related to production or processing. This makes these methods a very powerful tool.[27] Though traditional descriptive methods focus on quantifying the perceived intensities of the sensory characteristics of a product (what could be termed "quantitative" methods), recent developments have taken a qualitative approach to gather descriptive information. An example of the latter is the so-called "check-all-that-apply" (CATA) test. This is a rapid sensory profiling technique that can help identify key sensory characteristics of a product, though it does not rate their intensity. The level of training required from tasters to use a CATA test is very low compared to traditional descriptive panels, as tasters are not asked to rate the intensity of an attribute, but rather just identify the attributes present in the sample.

The sensory assessment used in the value assessment system combines intensity ratings and CATA descriptions, seeking to offer cuppers a familiar descriptive approach. Instead of quantifying the intensity of specific sensory attributes, such as "chocolate" or "fruity," the intensities rated are those of the cupping sections similar to those used by cuppers for years. Thus, the sections for which intensity is rated are fragrance, aroma, flavor, aftertaste, acidity, sweetness, and mouthfeel. It is the total intensity of each section that is rated, i.e., the total fragrance intensity, as opposed to the intensity of a specific fragrance note.

Descriptive assessment follows the steps outlined in 6.1. Before starting, the roast level of the sample is estimated visually, when applicable, and recorded. Next, in the first step of the assessment, fragrance is assessed and its intensity rated; the characteristics found in the fragrance are marked in the CATA section for orthonasal characteristics (below the fragrance and aroma intensity scales). In the second step, the coffee is brewed, aroma is assessed, and its intensity rated; the characteristics found in the aroma are also marked in the same CATA section for orthonasal characteristics. In the third step, the brew is liquored several times, during which the remaining sections are assessed. The intensity of flavor and aftertaste are rated, and their characteristics are checked in a CATA list that accounts for both flavor and aftertaste. The acidity intensity is rated, and its characteristics are described through freely elicited terms. The same is done for sweetness, while mouthfeel is rated in intensity, and its characteristics checked in the mouthfeel CATA list. In all sections, cuppers are free to elicit descriptors to better describe the checked terms or, in rare cases, to describe characteristics that are not covered in the CATA lists.

Most cuppers have received some kind of descriptive training, which usually includes training in intensity rating of some characteristics such as acidity, and the use of both sensory references and a lexicon to describe the coffee's sensory characteristics qualitatively. The signs of a high-performing descriptive cupper are, thus, consistency with their own intensity ratings and accuracy in the use of descriptors. When cupping in a panel or group, the group's results serve as a frame

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27 See *Coffee Sensory and Cupping Handbook* (2021), chapter 14.

of reference for individual cuppers' performance. A given cupper's individual results may be compared to the group's or to other cuppers' performance. With increased training, a cupping group may achieve higher levels of consistency and agreement on both intensity ratings and the qualitative descriptors that best represent a coffee.

7.2. Rating Intensity

In traditional descriptive methods, the intensity of a sensory characteristic is usually rated using 15-point scales. For the sake of compatibility with traditional sensory methods, the same scale has been adopted in this protocol for the descriptive assessment. As they progress through the cupping sections, cuppers are required to assess the total intensity of each section using the 15-point scale. As an example, if a coffee's fragrance has a strong fruity note and a subtle chocolate note, the cupper would not rate the individual intensity of each characteristic, but the combined (total) intensity of the fragrance—how powerful the fragrance is, no matter its blend of components. This simplifies calibration, as cuppers don't have to keep in mind a separate intensity scale for each sensory characteristic.

Historically, cuppers have been trained to assess a section's intensity using at least three levels—low, medium, and high. It is easy for most cuppers to tell if a coffee's acidity, for example, is low, medium, or high. This is a first step to rate the section's intensity. If it is perceived as low, it should be rated between 0 and 5 on the scale; if it is medium, between 5 and 10; and if it is high, between 10 and 15. As a second step, the intensity is fine-tuned within the selected range. For example, if the acidity is medium-high, perhaps it could be rated between 7.5 and 9.

Fragrance
Intensity

LOW	MEDIUM	HIGH
0	5	10	15

Figure 1. Intensity scale for "fragrance" on the descriptive assessment form.

Assessors may place a tick anywhere along the intensity scale, even in between integer numbers; however, for the sake of simplicity, the integer number closest to the tick will be recorded as the cupper's output. If, for whatever reason, a cupper changes their mind regarding a section's intensity before the cupping is over, they shall add a second mark and show the direction of change with an arrow above the scale. The original tick shall not be erased.

7.3. Choosing Descriptors

The qualitative characteristics of the coffee are recorded using CATA lists. There are four boxes in the form with CATA lists in them:

Fragrance and aroma box. This box is located below the intensity scales for fragrance and aroma. It includes a single list meant to encompass both orthonasal[28] sections (fragrance and aroma). The list includes the nine categories in the inner circle of the flavor wheel (floral, fruity, sweet, sour/fermented, green/vegetative, nutty/cocoa, spicy, roasted, and other). In addition, several second-tier options from the middle ring of the wheel are included in the CATA list. For example, the berry, dried fruit, and citrus fruit subcategories from the "fruity" category have been included in the list. Up to five descriptors that best represent the coffee should be selected in this list, encompassing both fragrance and aroma.

Flavor and aftertaste box. This box contains two lists. One is for the retronasal perceptions and the other is for the gustatory perceptions. As the retronasal list (on the left-hand side) refers to the olfactory dimension of coffee, the descriptors used are the same as for the fragrance and aroma CATA list, and the way to use it is the same (up to five options that best represent the coffee). The main tastes list, on the right-hand side, is meant to record up to two main tastes that best represent the coffee from both the flavor and aftertaste sections. Though all coffees have a certain bitterness, if bitterness stands out, this box should be selected. It is the same case for the other tastes: if a taste stands out in the sample, especially in the context of other coffees tasted, it should be selected.

Figure 2. Portion of the "Flavor" and "Aftertaste" category section on the descriptive assessment form. CATA boxes for retronasal perceptions are on the left and gustatory perception (Main Tastes (2)") on the right.

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28   Orthonasal: a smell perceived through the nostrils, as opposed to retronasal (a smell perceived from the back of the palate, and fused with other stimuli to produce the sensation of flavor).

Mouthfeel box. This box includes one CATA list, from which up to two options should be selected. Note these options describe the mouthfeel quality, as its intensity (in the form of body level or thickness, for example) has been rated on the corresponding scale.

Freely elicited descriptors. All the descriptive sections, including acidity and sweetness, allow cuppers to write down freely elicited descriptors. There are three situations when a written descriptor is in order:

- When there are no CATA boxes to check (i.e., in acidity and sweetness).
- When there is a very precise descriptor for the category box marked. Here, the descriptor expands the meaning of the selected descriptor. As an example, if a conspicuous blueberry flavor is found, one would mark "berry" (and, "fruity"), and write down "blueberry" in the flavor and aftertaste box.
- When there is a clear note that does not belong to any category. As an example, when a rare, dried tomato note is found, which would be hard to place under any category.

8. Affective Assessment

8.1. Overview

The affective assessment serves the same purpose as the 2004 SCA Cupping System, which is to rate a cupper's impression of quality for a given coffee and to express it in the form of a total score. However, some major changes have been introduced to the affective assessment which, collectively, make it simpler and better aligned with sensory analysis practices.

For cuppers familiar with the 2004 SCA Cupping Protocol and Form, the following is a summary of changes:

1. The coffee description is now a separate assessment. This means the space for notes below each section is now meant for affective notetaking.
2. The balance and clean cup sections have been removed. Balance is now rated as part of the overall section, while the perceived cup "cleanliness" can be rated in flavor or other impacted sections. See 11.4.
3. Sweetness is now rated along a scale, as this was identified as a necessary revision by most respondents in a 2021 survey about the strengths and weaknesses of the 2004 protocol.
4. Each section is rated using a 9-point scale, where the impression of quality for that section is rated between "extremely low" (1) and "extremely high" (9), with a central point at "neither high nor low" (5). This allows for a wider range of impression of quality than the prior range of 6–10, starting at "good."
5. There is no space for calculating the cupping score on the form. The formula is best calculated using a computer, an online tool, or a mobile app, though a two-way table can also be used. See Appendix 12.2.

Affective assessment follows the steps outlined in 6.1. In the first step, fragrance is assessed and its impression of quality rated. In the second step, the coffee is brewed, aroma is assessed, and its impression of quality rated. In the third step, the brew is liquored several times, during which the remaining sections are assessed. The impression of quality for flavor, aftertaste, acidity, sweetness, and mouthfeel is rated. After the last liquoring pass, the overall impression of quality is rated. If there are defects (see 8.4 and definition in 4.3), the number of defective cups and the name of the defect are recorded.

8.2. Impression of Quality and the 9-Point Affective Scale

An important principle in the affective assessment is the concept of "impression of quality." We define the term as follows:

> **Impression of Quality:** A coffee taster's opinion of the distinctiveness and desirability of a coffee cupping section, reflecting either their own preference or a known market preference.

Since this concept underpins the entire affective assessment, it deserves a detailed explanation.

First and most importantly, impression of quality evaluation is an *affective* test. "Affective test" is defined by the American Society for Testing and Materials (ASTM) as "any method to assess acceptance, liking, preference, or emotions for a stimulus or stimuli." This means impression of quality is based on the *subjective* experience of human subjects. It implies a judgment of good or bad, "high quality" or "low quality." These preferences, when applied to coffee, reflect a complex set of personal responses. Some of these responses are natural (like an aversion to extreme bitterness or spoiled aromas) and others are cultural (learned ideas about what coffee "should" taste like). Because it is an affective measure, impression of quality is expected to be somewhat diverse. Impression of quality reflects the important human reaction to coffee as a complex food and is therefore a critical metric when evaluating coffee in a professional setting. Furthermore, impressions of quality from different people may tend to converge when they share similar cultures, criteria, or liking patterns.[29]

We use the 9-point scale to measure impression of quality. The 9-point scale is the most commonly used affective measurement in food science and has been proven to be a robust tool to measure liking and preference.[30] The center point of the 9-point scale is the number 5, which reflects "neither high nor low impression of quality": a neutral assessment of a sensory attribute's likability. Numbers lower than 5 reflect an intensifying dislike (low impression of quality), the number 1 being an "Extremely low impression of quality." Numbers higher than 5 reflect an increasing positive impression of the coffee, with 9 being "Extremely high impression of quality." Our cupping system automatically translates the output from 9-point scales to the 100-point scale, which is better known in coffee (section 8.5).

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29 Pilot studies of this coffee assessment methodology show that cuppers along the same supply chain tend to converge in their impressions of quality – this is what was formerly called "cupper calibration."
30 See *Coffee Sensory and Cupping Handbook*, section 13.3.

IMPRESSION OF QUALITY

① EXTREMELY LOW   ④ SLIGHTLY LOW   ⑦ MODERATELY HIGH
② VERY LOW   ⑤ NEITHER HIGH NOR LOW   ⑧ VERY HIGH
③ MODERATELY LOW   ⑥ SLIGHTLY HIGH   ⑨ EXTREMELY HIGH

Figure 3. "Impression of Quality" rubric for the 9-point scale used in the affective assessment.

The cupper's impression of quality of each section shall be rated by filling the corresponding bubble in the form. If the impression of quality shifts as the coffee cools down, a second bubble could be filled, signaling the direction of change with an arrow. At any rate, if more than one bubble has been filled in a section, the "final" impression of quality shall be written in the "final" box at the end of each row, to express the final rating after the changes.

Figure 4. "Fragrance" and "Aroma" section on the affective assessment. A cupper will rate their impression of quality by filling in the corresponding bubbles, with the option to note their "final" impression of quality over time in the "final" bubble at the end of the row. Note the space for affective notes below the scales.

Because impression of quality is based on affective responses to specific coffee attributes, it is a subjective measure. However, a coffee taster may be reflecting not only their own taste preferences, but taste preferences of others for whom they might be acting as a buyer or appraiser. For example, a cupper might personally dislike earthy-tasting coffees, but recognize that certain consumer segments prize this flavor and value it highly. A cupper therefore might learn to recognize certain sensory attributes as ones that others value, which is why there is a reference to "a known market preference" in the definition. This concept is known to some as "inter-subjectivity," or the idea that an assessor might be able to, through learning and study, recognize flavors that are desirable to others.[31]

Tasters should take care to assess coffee honestly and thoughtfully, but they should also use the impression of quality scale intuitively. Their assessment of a particular coffee should reflect either their own preference or a well-known market preference, but it should *not* be influenced by other cuppers in a group setting. As a

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31 Again, this is a new understanding of what used to be called "cupper calibration." There can be no calibration in cupping, as there is no objective standard regarding the impression of quality. However, cuppers along a supply chain usually align inter-subjectively to their clients' needs.

score based on preference, some variation in impression of quality is to be expected, particularly in diverse or multicultural settings. The sign of a high-performing affective cupper is consistency with their own scores and preferences over time, not their alignment with other cuppers.

8.3 Affective Notetaking

An assessor completing a full descriptive assessment of a coffee will use freely elicited descriptors to be very precise about the coffee's sensory characteristics; there is no need to repeat the descriptive notes in the affective assessment. Instead, affective notetaking should reflect a judgement about the coffee's impression of quality and how it results from sensory characteristics. It may help to think of affective notetaking as a justification of a section's score: other parties along the chain will want to know what was so good in the coffee to deserve a very high score, what was so bad about it to deserve a low score, or even what was so nondescript in a coffee to deserve a neutral score.

Some types of affective notetaking include the following:

1. Just about right (JAR) ratings. A JAR rating is an appraisal of whether there is too much, too little or "just about right" of a certain character. Examples: "too acidic," "too fermented," "not sweet enough," "lacks body," "well balanced."
2. A judgement of how well a coffee fits a purpose or a character. For example: "great for our coffee of the month," "prototypical Yirgacheffe," or "I don't taste the Gesha."
3. A note about what a coffee's sensory attributes represent to us, even if vague. For example: "the floral flavor makes it very elegant," "the ashy aftertaste is disappointing," "the silky body is its best quality." Note that, although some descriptive aspects are included in this note, they are used to support an impression of quality. In other words, notes that reference sensory descriptors should also indicate the desirability or desirability of such characteristic.
4. A general, intuitive, or symbolic representation of the coffee. For example: "elegant," "wild," "exotic," "powerful," etc. As this type of note often does not translate across languages or cultures, assessors should take care that these notes—if included—either include additional context or are supported with other types of affective notes. In other words, assessors should exercise caution when including these kinds of comments. For example, "funky" is a vague word which is untranslatable to any language other than English. Beyond this, it also represents something very desirable for some people and something to be completely avoided for some other people.

Note the subjectivity implicit in all affective notes. While descriptive notetaking should be objective, the purpose of affective notetaking is to justify an assessor's impression of quality: these notes should explain an assessor's subjective impression. Assessors are not expected to be objective in their affective notetaking, but they should be serious and professional.

8.4 Defects and Uniformity

8.4.1. DEFECTS

Distinct from physical defects, sensory defects are specific sensory attributes thought to be unquestionably—or universally—undesirable. In practical terms, this implies the options for sensory defects are limited to potato, moldy and phenolic, with the latter having a wide range of expression, which includes the "Rio"-related flavors and medicinal flavors.

Some sensory attributes that used to be clearly considered as defects, such as overripe, or isovaleric acid, have now become controversial as natural and honey processing methods and more intense fermentations make their way to specialty coffee markets. For that reason, it is not easy to categorize sensory attributes starkly as "desirable" or "undesirable." Such notions evolve as the industry and the markets evolve, and cuppers should both be well informed and exercise careful judgment whenever they encounter a potentially defective note.

At any rate, sensory attributes considered "defects" by the cupper shall be identified as specifically as possible. As a rule of thumb, "if you can't identify it as a defect, it's probably not a defect." On the other hand, care should be taken to avoid categorizing all "funny flavors" under a large defect name umbrella, such as "phenolic." In other words, before a "defect" is penalized as defective, the cupper shall be clear that the "undesirable flavor" is indeed a defect and should be able to identify such flavor in a very specific way, avoiding catch-all terms.

Whenever a defect is found in one or more of the cupping cups, the affective assessment form requires two fields to be filled out: the defective cups and the defect type (potato, moldy, or phenolic). If any of these two fields are not properly filled out, the coffee shall not be counted as defective. In the "number of cups" field, the cupper shall mark the boxes corresponding to the cups where a defect is present. For example, if a defect is found in cups #1 and #5, the first and fifth boxes shall be marked. Finally, the type of the defect shall be clearly identified from the "defect type" options.

8.4.2. UNIFORMITY

The uniformity box is a small discriminative test embedded in the affective form. Though this is not the ideal situation from the sensory science point of view, uniformity is an advantage given by cupping methods (in which each cup is ground independently) that is seized in this methodology, as it is an indication of the lot's uniformity.

Sometimes, there may be brewing errors that impact the intensity of a coffee's sensory attributes. Those errors are human, and a coffee's uniformity rating should not be affected by such errors. For that reason, *quantitative* differences among cups, in which the same attributes are perceived at higher or lower intensity, should

not be penalized. All non-uniform cups accounted for in the form shall represent *qualitative* differences among the cups, in which a distinctly different characteristic is either present or absent in one or more cups. Whether or not such a different characteristic is considered more desirable or undesirable than the rest of the cups, the fact that it is qualitatively different is enough to mark that cup as non-uniform. The boxes marked as non-uniform in the form shall correspond to the physical cups. For example, if a qualitatively different characteristic is found in cups #1 and #5, the first and fifth boxes shall be marked.

There should be coherence between the cups marked for uniformity and those marked for defects. Though non-uniform cups do not have to be marked as defective, all defective cups shall be also marked as non-uniform, with the sole exception of evenly defective coffees across all cups.

8.5. The Cupping Score

Most coffees evaluated according to the 2004 cupping protocol ranged between 80 and 88 in cupping scores, with very few exceptions scoring below 79 or above 90. For a scale supposedly inspired by a 100-point scale, this range is too narrow, to the point that non-cuppers were usually confused when they were told the highest and lowest scoring coffees in a session were both in the 80–88 range. For that reason, besides being designed to use the information of the affective form as input (including the 9-point affective ratings for the different sections), the current formula is designed to make a wider use of the scale.

Hence, the cupping score is now the result of the following equation, rounded to the nearest 0.25 points:

$$S = 0.65625 \sum_{i=1}^{i=8} h_i + 52.75 - 2u - 4d$$

Where:

S is the cupping score prior to rounding

h_i is the 9-point score of each affective section,
from *i = 1* (fragrance) to *i = 8* (overall)

u is the number of non-uniform cups

d is the number of defective cups

It is true this formula may be too complex for day-to-day manual calculation, which is one of the reasons it has not been included in the affective form. Another reason why it was not included was to avoid "reverse cupping," in which a cupper aims at a final score and, from there, works out the value each individual section should have, instead of deriving the total score from the individual sections' scores. At any rate, this formula is easily calculated using a spreadsheet or a special cupping score

calculator.[32] Whenever access to computing tools is not possible or impractical, a two-way table may be used to calculate the final score from the sum of all scores (the Σ in the above formula; see 12.2).

The cupping score formula is a linear equation, where the main linear variable is the sum of the impression of quality scores of the different cupping sections. If, for a given coffee, the scores of all sections were 5 ("neither high nor low"), the final score would be 79 (assuming there are no uniformity or defect issues). If the scores of all sections were 9 ("extremely high"), then the final score would be 100 (again, assuming no uniformity or defect issues). These two points, 79 and 100, anchor the linear equation. If uniformity issues are found, two points per non-uniform cup are subtracted. If there are defects, four points per defective cup are subtracted.

Score as Function of Impression of Quality
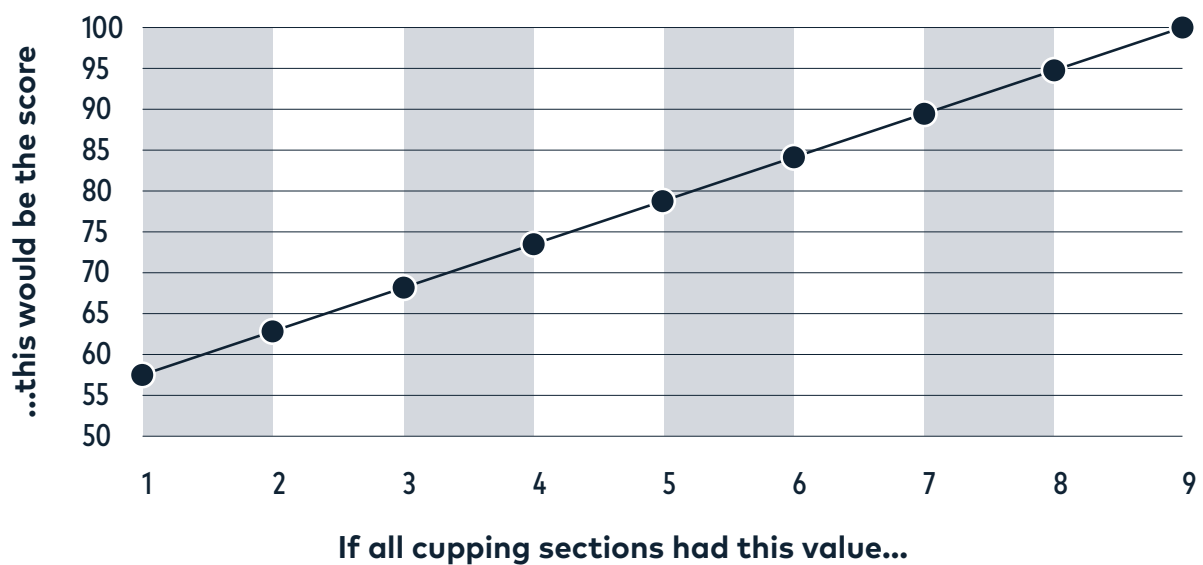
We do not necessarily anticipate a linear correlation between the "old cupping score" and the new score as calculated with this formula, as the new affective form allows a lot more room for "low impression of quality" coffees than the prior system did, with the scale of the prior system starting at "6 – good." In general, the formula is designed for a wider use of the scale, but the fact that cuppers can now pick scores for "extremely low" to "slightly low" impressions of quality means we may now see more coffees below 79.

To assist cuppers in calculating the final score from their affective scores in each section, the SCA has published a two-way table for the sum of scores in the affective assessment to the Coffee Value Assessment 100-point scoring; see Appendix 12.2.

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32   Find a web-based score calculator at https://sca.coffee/cuppingscore

9. Extrinsic Attributes

9.1. Overview

The SCA's definition of specialty coffee is based on the idea that coffee's value is based on distinctive attributes, which in their totality make a coffee "special."[33] In this value assessment paradigm, a coffee's intrinsic attributes—its physical and sensory properties—are evaluated during the physical, descriptive, and affective assessments, respectively. The next step is identifying and evaluating a coffee's extrinsic attributes—those informational or symbolic attributes that also contribute to specialty coffee's value.[34] To date, studies on the value of different extrinsic attributes have either focused on understanding a single attribute, like Fair Trade certification, or on ranking the importance of a series of attributes. Without a way to record attributes in the coffee evaluation process, it has been impossible to collect and compare data from a wide range of sources about which attributes drive purchasing decisions.

The extrinsic assessment of a coffee seeks to document as many of these informational details as possible. Just as the descriptive sensory assessment seeks to list significant sensory attributes of the coffee, the extrinsic assessment is a similar activity aimed at listing any extrinsic attributes that may make the coffee interesting to buyers in the marketplace. As repeated studies have shown that any kind of extrinsic information about a coffee—from a cue about its origin to the color of its packaging—can (and does) influence a coffee taster's sensory perception as well as their perception of quality and/or value, any assessment of extrinsic information should be kept wholly separate from the other sensory assessments.[35]

There are many different potential extrinsic attributes in a complex product like coffee. After much discussion and review of the April 2023 "alpha" version of the assessment, the 2024 "beta" version of the extrinsic assessment introduces categories more closely aligned with the language and logic of the *SCA Coffee System's Map*—a similar relationship to that found between the *SCA Coffee Taster's Flavor Wheel* and the CVA Descriptive Assessment. Outlining the relationship between key actors and actions in the specialty coffee industry, the *SCA Coffee Systems Map* arose from the SCA's Price Crisis Response Initiative as a way to shift the focus from the individual parts of a system to how the system operates as a whole. By adopting the same language and logic as the Systems Map, it is hoped that the extrinsic assessment will help the SCA understand in greater detail how extrinsic attributes affect value.

Like the descriptive assessment, the extrinsic assessment will focus on a few widely used attributes within each category, rather than a long list of possible attributes, with assessors strongly encouraged to add their own freely elicited descriptors. To this end, in addition to outlining the categories and attributes contained in the extrinsic assessment below, this document also includes a list of additional

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33   SCA, *Towards a Definition of Specialty Coffee.*
34   SCA, *Towards a Definition of Specialty Coffee.*
35   SCA, *The CVA Extrinsic Assessment: Literature Review, Survey Results, and Proposal*, Published April 2024.

potential attributes which may be captured as freely elicited descriptors on the assessment.

The presence of an attribute on the assessment will not necessarily mean that it is more important or more valuable than attributes that are not listed—rather, these attributes will appear because they have been demonstrated to generate value and are recognizable to cuppers working anywhere in the coffee system. In digital applications, this list can feed a database that can be queried to determine which informational attributes correlate to higher value in the marketplace and desirability in different consuming regions.

9.2. Farming Information

Farming is described in the *SCA Coffee Systems Map* as "planting, tending, and harvesting coffee seeds from coffee trees."[36] The specialty coffee marketplace values traceability and unique identities, and many specialty coffee buyers and sellers emphasize information about a coffee's place of origin—i.e., where it was farmed and by whom—with variable granularity. This information has been shown to add to the impression of quality of a given coffee in both consumer-facing and green coffee settings. For example, in Cup of Excellence competitions, researchers found that certain varieties of coffee plants and the presence of sustainability certifications had "a positive and significant effect on quality score." Higher scores also correlate to higher prices at the green coffee auction.[37] Even the merest hint of identifying information tied to a particular geography—not even the exact information, but simply that a coffee comes from an identifiable geography—has been shown to impact the brainwaves and preferences of consumers in a blind-tasting situation. This is particularly the case for those who already have some familiarity with a product.[38]

In the extrinsic assessment, the "Farming Information" category encompasses the following list of extrinsic attributes:

- Country
- Region, or other sub-national geographical information such as state, province, municipality, village, etc.
- Name of farm or co-op
- Name of producer(s)
- Species
- Variety or blend of varieties
- Harvest date/year
- Other

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36   SCA, *Coffee Systems Map*.
37   Togo M. Traore, Norbert L. W. Wilson, and Deacue Fields, "What Explains Specialty Coffee Quality Scores and Prices: A Case Study from the Cup of Excellence Program," *Journal of Agricultural and Applied Economics* 50, no. 3, April 2018: 1–20. https://doi.org/10.1017/aae.2018.5
38   Mateus Manfrin Artencio, "All in the Mind: How External Cues Impact Brain Activity and Preference," *25, Issue 18* (Specialty Coffee Association), https://sca.coffee/sca-news/25/issue-18/all-in-the-mind-how-external-cues-impact-brain-activity-and-preference

In this case, users could populate the "other" category in this section with similar or related information as freely elicited descriptors:

- Other geographical information, which includes:
    - Altitude
    - Latitude
    - Longitude
    - GPS Coordinates/Polygon
- Other botanical, cultivation, or picking information, which includes:
    - Pruning
    - Fertilizing
    - Shading
    - Other growing conditions
    - Harvesting approach

9.3. Processing Information

Processing is described in the *SCA Coffee Systems Map* as "preparing coffee seeds for stable transportation and storage." In recent decades, specialty coffee has experienced a "revolution" in this area: the speed of new method development only continues to increase. Driven by the success of honey and natural processes in the early 2000s, new approaches—particularly those merging the fermentation practices of other industries outside of coffee—have emerged, including extended fermentation periods, carbonic maceration, and "co-fermentation" (i.e., the introduction of other organic products, like fruit, to a fermentation tank).[39]

This revolution brings opportunities for technical progress in processing and for leading processors to add value to their coffee, but it can also be difficult to navigate for professionals and consumers alike. As the "processing revolution" continues, extrinsic attributes linked to processing information will likely continue to evolve, but two key categories of processing information are likely to remain constant: processor information and process type. In the "Processing" category of the extrinsic assessment, users will have space to note the following attributes:

- Name of Processor(s)
    - Wet Mill/Processing Station
    - Dry Mill
    - Other, which could include the name of the lead processor(s) if key individuals are known
- Process Type
    - Washed
    - Natural
    - Other

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39   Joel Schuler, "Paradigm Shift: The Post-Harvest Processing Revolution," presented at Re:co Symposium in April 2022, released as a video recording on SCA News on October 15, 2022: https://sca.coffee/sca-news/watch/video/paradigm-shift-the-post-harvest-processing-revolution

With the broad range of names and descriptions used in processing, the SCA anticipates that the "Other" section for "Process Type" could include a wide range of information. For example, it may be a good practice to also include some basic descriptive information about the process type. Some terminology the SCA is currently exploring as a part of an emerging green coffee identity standard includes:

- Fruit-dried (dry process, natural)
- Mucilage-dried (honey, semi-dry)
- Parchment-dried (washed, wet process, semi-washed, demucilaged)
- Seed-dried (wet hulled)

The type of fermentation, as described by the processor, may be a valuable extrinsic attribute for many people. Although there are no standard definitions of any of those methods, popular terms to describe the type of fermentation include:

- Lactic
- Anaerobic
- Carbonic maceration
- Multiple fermentations
- Co-fermentation

Additionally, it may be worthwhile to note where on the continuum of "nothing added during processing" to "something added during added to processing" a particular sample exists.[40] This includes:

- Microbial starters, like a proprietary strain of yeast
- Fermentation adjuncts, like flowers, herbs, or fruit
- Flavoring agents, applied before drying (natural or artificial)
- Flavoring agents, applied during or after drying (natural or artificial; for example, a natural "flavoring agent" applied after drying might be the practice of storing green coffee in a bourbon barrel)

9.4. Trading Information

Although the *SCA Coffee Systems Map* distinguishes between the activities of "Exporting" (described as "arranging a coffee's departure from its country of origin, including coordinating logistics and absorbing financial risk") and "Importing" (described as "receiving coffee in its destination country, including coordinating logistics and absorbing financial risk"), the extrinsic attributes which are likely arise from these activities are captured in the single category of "Trading Information" in the extrinsic assessment.

Like the other categories within the extrinsic assessment, the attributes listed within this section appear because they have been demonstrated to generate value

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40   Mario Fernández Alduenda, "Understanding Shifting Coffee Identity Standards," SCA News, published July 26, 2020. https://sca.coffee/sca-news/read/understanding-shifting-coffee-identity-standards

and are recognizable to cuppers working anywhere in the coffee system. Data from the physical assessment, as well as farm and process information, might result in a coffee receiving a grade within a classification system. Some of these systems are international, while others have been developed and governed by individual producing countries. In many cases, this was for the purpose of signaling to buyers what to expect in the cup before cupping became common practice in coffee supply chains. In this category, assessors shall note any grades the coffee might qualify for, such as:

- Size grade (AA, Supremo, etc.)
- Other grade (EP, SHG, SHB, etc.)
- ICO Number
- Other

However, there is—as within all categories of the extrinsic assessment—the opportunity for assessors to include the wide variety of information a coffee may accrue during the trading process, like:

- Trading model, for example "direct trade," "spot purchase," etc.
- Farmgate price
- FOB price
- Price premium

9.5. Certification Information

Many coffees carry product certifications or verifications, which can be very important to commercial buyers and consumers. Conducted by a third-party, certifications occupy a unique space in that they guarantee information across multiple extrinsic attribute categories (i.e., farming, processing, grading, and/or trading information). In a study from 2022, coffee drinkers report that product claims about fair prices paid to farmers, good labor practices, thriving communities, environmental sustainability, and support for coffee communities are key drivers of their purchasing decisions, alongside intrinsic attribute information like roast level.[41] These programs typically ensure that certain environmental, ethical, and economic qualifications have been met using standards and independent, on-farm verification of compliance with the practices and norms stipulated by the standard. Some globally recognized, third-party product certifications include:

- 4C
- Fair Trade
- Organic
- Rainforest Alliance
- Other

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41   Jenn Rugolo and Peter Giuliano, "Discussing Key Findings: National Coffee Data Trends Specialty Coffee Report," *SCA News*, June 13, 2022, https://sca.coffee/sca-news/discussing-key-findings-2022-national-coffee-data-trends-report

Other information which could be captured here, as freely elicited descriptors, includes:

- Other third-party certification schemes like SMBC Bird Friendly or Regenerative Organic, which may be slightly less well known or studied than those listed above;
- Second-party verification schemes, developed by companies rather than in collectives (for example, Nespresso AAA or Starbucks C.A.F. Practices);
- Geographical Indication, an intellectual property right used on products that have characteristics attributable to a specific geographical origin (for example, Café de Colombia, Café Veracruz, Café Genuino Antigua).

9.6. Others

The above checklist is not meant to be exhaustive. Any other extrinsic attribute—including more personal information about the farm or producer that might add value to the coffee in the supply chain—should be listed, to help in the final assessment of a coffee's total value. As we noted above, research on buyer behavior and consumer willingness to pay both show that extrinsic, or symbolic, attributes influence purchasing decisions. The coffee aisle of any supermarket will offer ample examples of extrinsic information being used on labels and packaging to communicate about the product. In that context, it's impossible to perceive the product's intrinsic attributes, but sellers of brewed coffee or espresso are equally likely to use farmer stories, photographs, and certifications to send signals to their customers (and prospective customers) about what kind of experience to expect and what kind of business they are.

As is the case with intrinsic attributes, not all buyers and markets share the same preferences, so it should not be expected that a certain attribute, like a certification, automatically confers additional value to a coffee. Adding an extrinsic attribute checklist to the specialty coffee evaluation process enables cuppers to—for the first time—formally recognize that this information plays a major role in specialty coffee purchasing at every stage of the value chain. It also enables buyers and sellers to negotiate the value of characteristics beyond flavor notes and cup scores.

10. Recommendations to Assess Coffee Value

Different people use the term "value" in different ways, depending on the context of its use. In this section, we'll discuss the economic, aesthetic, and human meanings of the idea of value.

10.1. Economic Value

The dominant theory of value in modern economics is termed the "subjective theory of value."[42] In simple terms, the subjective theory states that the value of a good or service is derived from the subjective needs and preferences of the individual who is judging it. This theory is a key concept in modern economic thinking and explains why markets behave the way they do—for example, why a particular product might fetch different prices in different situations.

This is one reason why the separation between the descriptive and affective assessments in this system is so useful. It also explains why the collection of data in the physical and extrinsic assessments is so important. The objective physical, descriptive, and extrinsic data can be collected and reported to multiple market actors, allowing them to determine whether the coffee being evaluated will meet their needs. The affective assessment, meanwhile, addresses the sensory *preferences* of an individual or a market, recognizing that this information will always be subjective. The information collected across the assessment system is therefore extremely useful in the coffee marketplace. It allows an individual to assess the coffee in a holistic way, considering all its attributes and giving the coffee the best possible chance of finding a buyer who will treasure it.

In discussing this process, it's important to distinguish between "value" and "price." Though the concepts are linked in economics, "price" refers to the amount of money that a buyer pays to a seller for a good or service. "Value," on the other hand, refers to the worth or usefulness that a good or service has to a buyer. Price can act as a signal of value, since a buyer will normally pay more for a coffee they see as having higher value. However, price can also be driven by other phenomena, such as supply and demand. This system is focused on value assessment, and therefore can be used as a tool for price discovery. However, it will never dictate or calculate the price of a coffee, which can only be determined by a buyer and a seller.

In a practical sense, this method of value assessment is used to provide a complete picture of a coffee for use in a commercial setting: as an informational tool between a coffee buyer and seller, as a preshipment or arrival report, as a report to a coffee producer, or as a record for a coffee roaster's quality control department.

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42   N. Gregory Mankiw, David R. Hakes, and N. Gregory Mankiw, *Study Guide: Principles of Microeconomics* (Stamford, CT: Cengage Learning, 2015).

10.2. Aesthetic Value

The second sense of the word "value" is the aesthetic sense. Coffee flavor can be a thing of beauty, and the aesthetic appreciation of a delicious, well-crafted coffee is a key part of the specialty coffee experience. This appreciation can inform an economic transaction (see above), but it need not necessarily be seen in economic terms—the beauty of a coffee experience stands on its own as a singular joy. This holistic value assessment approach can serve in the aesthetic appreciation of coffee by guiding a coffee taster to document the salient sensory, physical, and extrinsic properties of a coffee. It is a kind of shorthand to be used later to remember and identify especially aesthetically beautiful coffees. In this way, coffees can be recognized for their technical excellence, tradition, culinary value, and natural beauty.

10.3. Human Value

As a fundamental principle, all people are intrinsically valuable and have equal worth. By extension, all human effort—such as the labor needed to create a coffee—has value, and this should be recognized. Human preferences and subjective experiences are also valuable. It is this recognition that allows us to treat others with dignity and respect: valuing human effort and human experience wherever we encounter them. This new method of assessment can help document the human effort needed to produce a coffee. This is the case particularly in the "extrinsic" section: identifying the individual coffee producer, the co-op they belong to, the processor, the miller who prepared the coffee for export, etc. Those who seek to recognize this human effort can—if provided with the information in the extrinsic assessment of the overall value assessment system—identify and consider the individual contributions the many actors in the coffee value chain have made. On the other hand, human preferences and desires are respected too. This is particularly the case in the system's affective assessment, which allows the individual to express their likes and dislikes openly and freely, without constraint.

In this way, the overall system has been designed to help assess value in all senses of the term: as an aid to economic transactions; as a tool to document aesthetic worth; and as a way to recognize human effort and preference.

10.4. A Holistic Evaluation: User Examples

How might someone use this new system to assess coffee value in a concrete and practical way?

From a buyer's perspective, the system is most useful when they are clear about what they value in a coffee, either as an ideal or as very specific needs. Before beginning any sample assessments, they might produce a thorough and honest list of the attributes they are prizing or seeking. This list of attributes could then become the standard against which the coffees which come their way are measured. Alternatively, they could use the system to help them create this list of

attributes by assessing a broad range of samples to help them determine which attributes, from the different intrinsic and extrinsic categories, they are inclined to reward. A buyer might also wish to create different "profiles" of attributes depending on their business needs—different coffee styles.

Later, when assessing samples for purchase, they could compare the holistic assessment of each sample with their list of desired attributes. For the sake of transparency, this exercise can be shared with other parties in the transaction (e.g., the seller) in order to help articulate where the sample fulfills, exceeds—or falls short—of the desired attributes. This exercise is also helpful for potential sellers to better tailor their offer to a market's needs next time.

From a seller's perspective, the system helps to surface the broader list of a coffee's potentially desirable attributes and more clearly communicate a coffee's value in all senses of the term to a potential buyer. By requesting a buyer's "profile(s)" of desirable attributes, the seller may understand whether or not it would be advisable to send samples, or if that effort would be better expended elsewhere.

11. Frequently Asked Questions

11.1. General

What does the Coffee Value Assessment do?
It allows coffee experts to inventory the valuable attributes of a coffee according to the SCA's definition of specialty coffee. These include physical, sensory, and informational attributes.

Does the Coffee Value Assessment determine the price of a coffee?
No. Only market actors can determine the price of a given coffee. The value assessment system seeks to create a profile of all the valuable attributes of a coffee, so the total value of a coffee can be determined.

It's called "value" assessment system; what determines value?
A coffee's value is determined by its attributes—if it shows valuable attributes, it should be a valuable coffee. An attribute, however, may or may not be valuable for different market actors. The idea is to be transparent about what attributes are most valued, so that a coffee that shows them could be appropriately evaluated.

Is this the same as cupping?
Cupping, the standardized method of sensory evaluation in coffee, is used to determine the sensory attributes of a coffee using two tests: a descriptive assessment and an affective assessment. Cupping is an element of the Coffee Value Assessment System, along with a physical and extrinsic assessment of the coffee.

Why is cupping divided into descriptive and affective categories?
It has long been known that the description of flavors in a coffee is different from an assessment of liking or quality. In the previous SCA cupping system, these concepts were mixed together. This new system separates descriptive assessment— the objective description of a coffee's flavor profile—from affective assessment, the subjective impression of a coffee's quality. This separation is considered best practice in sensory and consumer science.

How will this affect coffee producers?
In our surveys of current users, we learned that the 2004 SCA system seemed to reduce a coffee's value to a single score. This system seeks to provide all market actors—including producers—with a more holistic and transparent assessment of a coffee, allowing them to find the best possible markets for their products.

What is the biggest advantage of using this new value assessment system?
The 2004 version could be summarized as "a method to produce a coffee's score," and this single, one-dimensional score became more important for value discovery than most other coffee attributes. By taking a holistic approach, this new value assessment system looks at all the different attributes of a coffee, of which the

score is just one attribute. It is therefore a more thorough evaluation than just the score. We hope this results in a more transparent and fair approach to discover a coffee's value.

How can using this value assessment system help connect the industry to end consumers?

This system to assess value proposes a common language to describe coffee along the value chain and vis-à-vis consumers. Rather than having a single cupping score that tells them little, consumers will have the opportunity to get a coffee's description, using standardized descriptors. It will also be easier to communicate extrinsic attributes to consumers and along the chain.

So, the specialty "threshold" is gone? As a producer, how can I obtain a premium on price without a clear distinction of better quality?

If a buyer is making a purchasing decision based on the singular "cupping score" alone, users will still be able to differentiate between coffees through the score—a 90-score coffee is clearly more appreciated by whoever assessed it than an 80-score coffee. As the industry adopts the CVA, we anticipate that, alongside a score in the new scale, contracts might include descriptive and extrinsic assessments as appendices. Future contracts may even list specific intrinsic or extrinic attributes to be shown by a coffee in a lot, rather than just a score.

11.2. Transition Period

Does the old 2004 form become invalid or obsolete immediately?

No, the two systems will coexist for a period of time while the industry helps us to refine the new system. We estimate an SCA standard pertaining to the new system will be published in late 2024 or 2025. In the meantime, we recommend taking advantage of this "provisional standard" phase to familiarize yourself with the new system as a cupper or as an organization.

What if my current contracts (buyer or seller) include a score? How can this translate for business transactions?

The score using the 2004 version of the protocol can still be included in contracts. We are hoping in the future, as the industry adopts the new system, that contracts might include a descriptive assessment as an appendix in the contract as well as the score in the new scale or—even better—specific intrinsic or extrinsic attributes to be shown by a coffee in a lot.

11.3. Coffees to Assess

Can I assess other *Coffea* species using this system?
The system has not been tested for species other than *arabica*, yet. Having said that, we believe the sensory assessments (both descriptive and affective) may work for other species, including *canephora* and *liberica*. However, the physical assessment is more exclusive to arabica and might not work for other species.

Can I assess any processing method using this system?
The sensory components of the system (descriptive and affective assessments) have been tested with natural and other processing methods, with great success (arabica only). However, the physical assessment might not be fully adequate to test processing methods other than washed, as it does not consider some of the effects of the different processing methods on the physical aspect of the bean.

Can I assess commodity coffee using this system?
Yes, this system is better suited than the 2004 version for assessing commodity coffee, as it allows for a wider range of qualities. The affective rating scale starts at 6.00, which is labeled 'good' in the 2004 version.

11.4. Using the Assessment

I don't have time, nor coffee, to do two cuppings—may I combine the affective and descriptive assessments?
Yes, you can do the affective and descriptive assessments in parallel, though you should be aware that there is higher risk of bias when you combine both assessments than when you do them separately.

Is cupper calibration still required, or is this all based on preference now?
In sensory science, "calibration" refers to the training of sensory panelists to accurately use a set of sensory references in a very specific testing environment and protocol. Although the specialty coffee industry has adopted this term widely, particularly in coffee competitions, the SCA suggests that instead, the practice the industry commonly refers to as "calibration" be better understood as "alignment." This is because groups of assessors (i.e., a cupping group) are not being asked to perform in the specific manner of a trained sensory panel.

Regarding the descriptive assessment, for a better group performance, tasters should get aligned in the use of the intensity scales and the use of descriptors. Regarding the affective assessment, you can always align with someone else's preferences, which makes total sense along a supply chain, where all suppliers are aligned with the chain's "preferences." Affective alignment, however, does not make much sense when we are talking about radically different cultures, markets, or supply chains. In those cases, it is more advisable to agree on the descriptive assessment—which is objective—and "agree to disagree" on the affective.

Why was "balance" removed instead of "overall"?
In the 2004 version of the protocol, both "balance" and "overall" looked at how all the sensory components of the cup interacted with each other to produce an overall impression, though "balance" was supposed to be more "objective," while "overall" was supposed to be more "subjective." Today, we know that both balance and overall were actually affective ratings of the overall perception of a cup's sensory attributes: there is no such thing as an "objectively" balanced cup: what is "too acidic" for some might be perfectly balanced for others. Therefore, we integrated "balance" into our current "overall"—you still get to rate a cup's balance, as part of that "overall," but we no longer assume every person has the same ideal of what a balanced cup should be. "Overall," on the other hand, as a holistic, affective rating of a coffee's sensory attributes, makes sense as an element to be considered in an affective assessment.

11.5. Scoring

What will happen to my coffee's score? (Will my score be lower now?)
Compared to the 2004 version scoring scale, with most coffees between 80 and 88, the new scale is designed to be wider. This means low-scoring coffees (typically below 79 in the 2004 version) will get even lower scores, while high-scoring coffees will now get even higher scores.

How can we know the coffee's "true score" if every cupper has a different impression of quality?
There has never been a true score for coffee. The score has never been an objective property of a lot of coffee. Every cupper has always had a different impression of quality, even though cuppers may align with each other. It is best to acknowledge that fact openly.

Are the scores from the physical assessment considered in the overall coffee score or "final analysis" for a coffee?
Only the affective assessment is considered for the coffee score. All other attributes may or may not be relevant on a case-by-case basis for value discovery. If a large, fancy bean is important for you, you might deem the bean size of coffee very valuable. Conversely, if a bean's size and appearance are not as important for you as flavor, for instance, then the physical appearance should not play a big role in value discovery.

If I don't want to perform all three assessments, does this affect the score that I can obtain?
Remember the score comes from the affective assessment only; information from other assessments is not used to produce the score. If you want to get a score for the impression of quality, you must do the affective assessment. However, there are many situations where you don't need to do all assessments—the full set of assessments is meant for evaluation of green coffee, especially in trading contexts. In other contexts, you might want to do only one assessment. For example, the descriptive assessment could be a good choice to profile a roasted coffee

product. If you are in a green coffee trading context, we recommend completing all assessments separately in order to record all the different attributes of a coffee lot for value discovery purposes.

May I come up with a hunch final score?
Our research has shown over and over that all affective scores for the same coffee are highly correlated with each other. In other words, if you know the score of one of the sections—say flavor—you can predict the other scores and the final score with a reasonable level of confidence. Furthermore, for neurological reasons, some cuppers feel more comfortable producing a holistic result than breaking up their perceptions analytically. The above justifies the validity of "hunch final scores," as long as the following conditions have been met: (i) the cupper is very familiar with the scoring scale, to the point where they can produce accurate "hunch" scores intuitively (this means you need to familiarize yourself with the new scale first); (ii) the coffee is thoroughly assessed and the cupping has not been abbreviated; and (iii) other parties are comfortable with the cupper's producing an intuitive or holistic score. An alternative for the "hunch" final score is just to use the Overall score in the 9-point affective scale as a proxy for the total impression of quality.

Appendices

12. Coffee Value Assessment Forms

12.1. Descriptive Form – *provisional standard*
12.2. Affective Form – *provisional standard*
12.3. Combined Form (Descriptive and Affective, with basic Extrinsic) – *in beta*
12.4. Extrinsic Form – *in beta*
12.5. Physical Form – *in alpha*

12.1. Descriptive Form – Version 2 (Provisional Standard)

SCA Coffee Value Assessment

Descriptive Form

Name ....

Date ....

Purpose ....

SAMPLE NO.   ROAST LEVEL

Fragrance Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Aroma Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Notes

☐ Floral
☐ **Fruity** ☐ Berry ☐ Dried Fruit ☐ Citrus Fruit   ☐ **Roasted** ☐ Cereal ☐ Burnt ☐ Tobacco
☐ **Sour/Fermented** ☐ Sour ☐ Fermented   ☐ **Nutty/Cocoa** ☐ Nutty ☐ Cocoa
☐ **Green/Vegetative**   ☐ **Spice**
☐ **Other** ☐ Chemical ☐ Musty/Earthy ☐ Woody   ☐ **Sweet** ☐ Vanilla/Vanillin ☐ Brown Sugar

Flavor Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Aftertaste Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Notes

☐ Floral
☐ **Fruity** ☐ Berry ☐ Dried Fruit ☐ Citrus Fruit   ☐ **Roasted** ☐ Cereal ☐ Burnt ☐ Tobacco
☐ **Sour/Fermented** ☐ Sour ☐ Fermented   ☐ **Nutty/Cocoa** ☐ Nutty ☐ Cocoa
☐ **Green/Vegetative**   ☐ **Spice**
☐ **Other** ☐ Chemical ☐ Musty/Earthy ☐ Woody   ☐ **Sweet** ☐ Vanilla/Vanillin ☐ Brown Sugar

Main Tastes (2)
☐ Salty ☐ Bitter
☐ Sour ☐ Umami
☐ Sweet

Acidity Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Notes

Sweetness Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Notes

Mouthfeel Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Notes

☐ **Rough** (Gritty, Chalky, Sandy)   ☐ **Smooth** (Velvety, Silky, Syrupy)   ☐ **Metallic**
☐ **Oily**   ☐ **Mouth-Drying**

SAMPLE NO.   ROAST LEVEL

Fragrance Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Aroma Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Notes

☐ Floral
☐ **Fruity** ☐ Berry ☐ Dried Fruit ☐ Citrus Fruit   ☐ **Roasted** ☐ Cereal ☐ Burnt ☐ Tobacco
☐ **Sour/Fermented** ☐ Sour ☐ Fermented   ☐ **Nutty/Cocoa** ☐ Nutty ☐ Cocoa
☐ **Green/Vegetative**   ☐ **Spice**
☐ **Other** ☐ Chemical ☐ Musty/Earthy ☐ Woody   ☐ **Sweet** ☐ Vanilla/Vanillin ☐ Brown Sugar

Flavor Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Aftertaste Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Notes

☐ Floral
☐ **Fruity** ☐ Berry ☐ Dried Fruit ☐ Citrus Fruit   ☐ **Roasted** ☐ Cereal ☐ Burnt ☐ Tobacco
☐ **Sour/Fermented** ☐ Sour ☐ Fermented   ☐ **Nutty/Cocoa** ☐ Nutty ☐ Cocoa
☐ **Green/Vegetative**   ☐ **Spice**
☐ **Other** ☐ Chemical ☐ Musty/Earthy ☐ Woody   ☐ **Sweet** ☐ Vanilla/Vanillin ☐ Brown Sugar

Main Tastes (2)
☐ Salty ☐ Bitter
☐ Sour ☐ Umami
☐ Sweet

Acidity Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Notes

Sweetness Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Notes

Mouthfeel Intensity   LOW   MEDIUM   HIGH | 0   5   10   15

Notes

☐ **Rough** (Gritty, Chalky, Sandy)   ☐ **Smooth** (Velvety, Silky, Syrupy)   ☐ **Metallic**
☐ **Oily**   ☐ **Mouth-Drying**

12.2. Affective Form – Version 2 (Provisional Standard)

SCA Coffee Value Assessment

Affective Form

Name ....

Date ....

Purpose ....

IMPRESSION OF QUALITY
① EXTREMELY LOW   ② VERY LOW   ③ MODERATELY LOW   ④ SLIGHTLY LOW   ⑤ NEITHER HIGH NOR LOW   ⑥ SLIGHTLY HIGH   ⑦ MODERATELY HIGH   ⑧ VERY HIGH   ⑨ EXTREMELY HIGH

SAMPLE NO. _____

Fragrance ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Aroma ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

Flavor ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Aftertaste ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

Acidity ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

Sweetness ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

Mouthfeel ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

Overall ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

NON-UNIFORM CUPS ☐ ☐ ☐ ☐ ☐
DEFECTIVE CUPS ☐ ☐ ☐ ☐ ☐
DEFECT (IF ANY)
☐ MOLDY
☐ PHENOLIC
☐ POTATO

SAMPLE NO. _____

Fragrance ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Aroma ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

Flavor ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Aftertaste ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

Acidity ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

Sweetness ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

Mouthfeel ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

Overall ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)
Notes

NON-UNIFORM CUPS ☐ ☐ ☐ ☐ ☐
DEFECTIVE CUPS ☐ ☐ ☐ ☐ ☐
DEFECT (IF ANY)
☐ MOLDY
☐ PHENOLIC
☐ POTATO

12.3. Combined Form (Cupping Form) – Version 2

SCA Coffee Value Assessment

Combined Form

Name .... **Date** ....

Purpose .... **Sample No.** ....

IMPRESSION OF QUALITY
① EXTREMELY LOW ④ SLIGHTLY LOW ⑦ MODERATELY HIGH
② VERY LOW ⑤ NEITHER HIGH NOR LOW ⑧ VERY HIGH
③ MODERATELY LOW ⑥ SLIGHTLY HIGH ⑨ EXTREMELY HIGH

| PART 1: DESCRIPTIVE ASSESSMENT | ROAST LEVEL | | PART 2: AFFECTIVE ASSESSMENT |

Fragrance
Intensity — LOW 0 · 5 MEDIUM 10 HIGH 15
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)

Aroma
Intensity — LOW 0 · 5 MEDIUM 10 HIGH 15
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)

☐ **Floral**
☐ **Fruity** ☐ Berry ☐ Dried Fruit ☐ Citrus Fruit
☐ **Sour/Fermented** ☐ Sour ☐ Fermented
☐ **Green/Vegetative**
☐ **Other** ☐ Chemical ☐ Musty/Earthy ☐ Woody
☐ **Roasted** ☐ Cereal ☐ Burnt ☐ Tobacco
☐ **Nutty/Cocoa** ☐ Nutty ☐ Cocoa
☐ **Spice**
☐ **Sweet** ☐ Vanilla/Vanillin ☐ Brown Sugar

Notes

Notes

Flavor
Intensity — LOW 0 · 5 MEDIUM 10 HIGH 15
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)

Aftertaste
Intensity — LOW 0 · 5 MEDIUM 10 HIGH 15
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)

☐ **Floral**
☐ **Fruity** ☐ Berry ☐ Dried Fruit ☐ Citrus Fruit
☐ **Sour/Fermented** ☐ Sour ☐ Fermented
☐ **Green/Vegetative**
☐ **Other** ☐ Chemical ☐ Musty/Earthy ☐ Woody
☐ **Roasted** ☐ Cereal ☐ Burnt ☐ Tobacco
☐ **Nutty/Cocoa** ☐ Nutty ☐ Cocoa
☐ **Spice**
☐ **Sweet** ☐ Vanilla/Vanillin ☐ Brown Sugar

Main Tastes (2)
☐ **Salty**
☐ **Sour**
☐ **Sweet**
☐ **Bitter**
☐ **Umami**

Notes

Notes

Acidity
Intensity — LOW 0 · 5 MEDIUM 10 HIGH 15
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)

Notes

Notes

Sweetness
Intensity — LOW 0 · 5 MEDIUM 10 HIGH 15
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)

Notes

Notes

Mouthfeel
Intensity — LOW 0 · 5 MEDIUM 10 HIGH 15
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)

☐ **Rough** (Gritty, Chalky, Sandy)
☐ **Oily**
☐ **Smooth** (Velvety, Silky, Syrupy)
☐ **Mouth-Drying**
☐ **Metallic**

Notes

Notes

| PART 3: EXTRINSIC ASSESSMENT |

Notes

Overall
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ (FINAL)

Notes

NON-UNIFORM CUPS ☐ ☐ ☐ ☐ ☐
DEFECTIVE CUPS ☐ ☐ ☐ ☐ ☐

DEFECT (IF ANY)
☐ **MOLDY** ☐ **PHENOLIC**
☐ **POTATO**

12.4. Extrinsic Form – Version 1 (Beta Testing)

SCA Coffee Value Assessment

Extrinsic Beta

Name .... **Date** ....

Purpose ....

SAMPLE NO. _____

Farming	Notes	**Processing**	Notes
☐ Country		☐ Name of Processor(s)	
☐ Region		☐ Wet Mill / Station	
☐ Name of Farm or Co-op		☐ Dry Mill	
☐ Name of Producer(s)		☐ Other	
☐ Species		☐ Process Type	
☐ Variety or Varieties		☐ Washed	
☐ Harvest Date/Year		☐ Natural	
☐ Other		☐ Other	

Trading	Notes	**Certifications**	Notes
☐ Size Grade		☐ 4C	
☐ Other Grade		☐ Fair Trade	
☐ ICO Number		☐ Organic	
☐ Other		☐ Rainforest Alliance	
		☐ Other	

Notes

SAMPLE NO. _____

Farming	Notes	**Processing**	Notes
☐ Country		☐ Name of Processor(s)	
☐ Region		☐ Wet Mill / Station	
☐ Name of Farm or Co-op		☐ Dry Mill	
☐ Name of Producer(s)		☐ Other	
☐ Species		☐ Process Type	
☐ Variety or Varieties		☐ Washed	
☐ Harvest Date/Year		☐ Natural	
☐ Other		☐ Other	

Trading	Notes	**Certifications**	Notes
☐ Size Grade		☐ 4C	
☐ Other Grade		☐ Fair Trade	
☐ ICO Number		☐ Organic	
☐ Other		☐ Rainforest Alliance	
		☐ Other	

Notes

12.5. Physical Assessment – in alpha

SCA Coffee Value Assessment

Physical Assessment
Alpha V1 - September 2023

Based on a 350g sample

SAMPLE No.	

Color ☐ Blue Green ☐ Bluish-Green ☐ Green ☐ Greenish ☐ Yellow-Green ☐ Pale Yellow ☐ Yellowish ☐ Brownish

Physical Defects

CATEGORY 1		Defect Count	Full Defects	CATEGORY 2		Defect Count	Full Defects	TOTAL GREEN DEFECTS
Full Black	(1:1)			Partial Black	(3:1)			
Full Sour	(1:1)			Parial Sour	(3:1)			_____
Dried Cherry	(1:1)			Parchment	(5:1)			
Fungus Damage	(1:1)			Floater	(5:1)			
Foreign Matter	(1:1)			Immature / Unripe	(5:1)			
Severe Insect Damage	(5:1)			Withered	(5:1)			
				Shell	(5:1)			
Total Category 1 Defects				Broken / Chipped / Cut	(5:1)			
				Hull / Husk	(5:1)			
				Slight Insect Damage	(10:1)			
				Total Category 2 Defects				

Moisture

Meter calibrated to ISO 6637

_____ %

Size

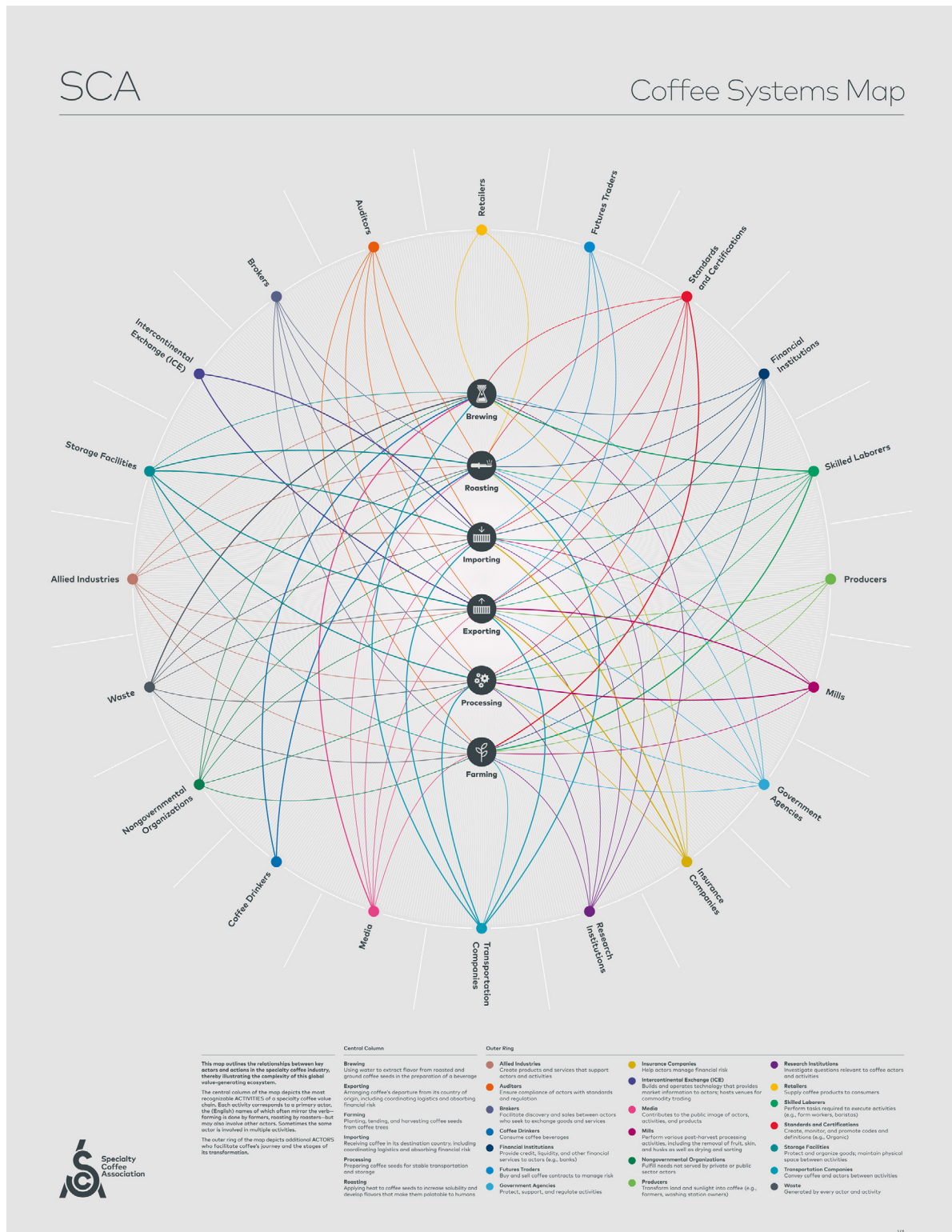|													
#10 ____ g ____ %	#13 ____ g ____ %	#16 ____ g ____ %	#19 ____ g ____ %	#22 ____ g ____ %
#11 ____ g ____ %	#14 ____ g ____ %	#17 ____ g ____ %	#20 ____ g ____ %	#23 ____ g ____ %
#12 ____ g ____ %	#15 ____ g ____ %	#18 ____ g ____ %	#21 ____ g ____ %	

13. SCA/WCR/UC Davis Flavor Wheel

COFFEE TASTER'S FLAVOR WHEEL CREATED USING THE SENSORY
LEXICON DEVELOPED BY WORLD COFFEE RESEARCH
© 2017 SCA AND WCR

V.1

14. SCA Coffee Systems Map

15. Olfactory Category Examples

All references are indicated in order of most ideal to helpful. Please note this list is still in development/ratification and is expected to function as a "living document." Additional references may be added over time as the use of the value assessment system indicates new descriptors are becoming increasingly important or valuable. For the latest full list of references, please see the digital version of the reference list here.

Suggested brands are provided for each reference, if available.

FLORAL

Example	How to Prepare	Suggested Brands
Jasmine Green Tea	Remove tea from bag, place one tea bag or 1 teaspoon in a plastic or glass cup and cover. Steep for 5 minutes and remove bag.	Bigelow Jasmine Green Tea, Twinings Jasmine Green Tea, Numi Jasmine Green Tea, Rika's classic Te de Jazmin, Pique Green Jasmine Tea
"Le Nez du Café" – Vial #12	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Café"
Scentone T100 – Vial #68	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	"Scentone" T100
Carnation Oil	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	Salvia Carnation Oil, Nature's Oil Floral Carnation Oil, Young Living/DoTerra Carnation Essential Oil
White Grape Juice	Place juice in a plastic or glass cup and cover.	Welch's White Grape Juice

FRUITY

Example	How to Prepare	Suggested Brands
Apple sauce (puree)	Dilute pure apple puree/sauce with water in a one-to-one ratio, place in a glass or plastic cup and cover.	Gerber, Motts, (no spices added).
Kiwi and apple syrups	Blend equal parts kiwifruit syrup and apple syrup; place in a glass or plastic cup and cover.	Monin, Torani, DaVinci Gourmet (plain fruit syrup, with no caramel or butter flavors)
"Le Nez du Café" – Vial #17 – Apple	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Café"
Scentone T100 – Vial #32 – Apple	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	"Scentone" T100
Kiwi-strawberry juice	Serve juice in a plastic or glass cup and cover.	Juicy-Juice 100% Juice Strawberry-Kiwi

BERRY (Fruity)

Example	How to Prepare	Suggested Brands
Strawberries	Place all natural strawberries (ripe) in a glass or plastic container at room temperature and cover.	Any
Strawberry syrup	Place in a glass or plastic cup and cover.	Monin, Torani, DaVinci Gourmet
Blackberry syrup	Place in a glass or plastic cup and cover.	Monin, Torani, DaVinci Gourmet
Raspberry syrup	Place in a glass or plastic cup and cover.	Monin, Torani, DaVinci Gourmet
"Le Nez du Vin" – Vial #12 – Strawberry	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Vin"
Scentone T100 – Vial # 15 – Strawberry	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	"Scentone" T100

DRIED FRUIT (Fruity)

Example	How to Prepare	Suggested Brands
Raisins and Prunes	¼ cup dry raisins and ¼ cup dry prunes chopped. Add ¾ cup water and cook in microwave on high for 2 minutes. Filter liquid with sieve. Place in a glass or plastic cup and cover.	Sun-Maid
Prune Juice	Dilute 1 part juice to 2 parts water. Bring to room temperature for serving. Place in a glass or plastic cup and cover.	Sunsweet

CITRUS FRUIT (Fruity)

Example	How to Prepare	Suggested Brands
Peels of Lemon and Lime	Place 0.5 g of lemon peel and 0.5 g of lime peel in a plastic or glass cup and cover.	
"Le Nez du Café" – Vial # 15 – Lemon	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Café"
Scentone T100 – Vial # 26 – Lemon OR #28, Lime	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	"Scentone" T100
Lemon syrup	Place in a glass or plastic cup and cover.	Monin, Torani, DaVinci Gourmet
Lime syrup	Place in a glass or plastic cup and cover.	Monin, Torani, DaVinci Gourmet
Citrus oils/Lemon oil	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	Salvia Oil, Nature's Oil, Young Living/DoTerra Citrus or Lemon Essential Oil

VANILLA / VANILLIN (Sweet)

Example	How to Prepare	Suggested Brands
Vanilla Extract	Place a few drops essence on a cotton ball, place in a plastic or glass cup and cover.	McCormick or other pure vanilla extract
Vanilla syrup	Place in a glass or plastic cup and cover.	Monin, Torani, DaVinci Gourmet
"Le Nez du Café" – Vial #10, Vanilla	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Café"
Scentone T100 – Vial #77, Vanilla	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	"Scentone" T100

BROWN SUGAR (Sweet)

Example	How to Prepare	Suggested Brands
Brown Sugar (Also called Muscovado or Turbinado)	Place one teaspoon brown sugar in a glass or cup and cover.	C&H Light Brown Sugar
"Le Nez du Café" – Vial #25, Caramel	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Café"
Scentone T100 – Vial #52, Brown Sugar OR #51, Caramel	One drop of oil on a cotton ball; place in a plastic or glass cup and cover.	"Scentone" T100
Caramel syrup	Place in a glass or plastic cup and cover.	Monin, Torani, DaVinci Gourmet

SOUR (Sour/Fermented)

Example	How to Prepare	Suggested Brands
White Vinegar	Place white vinegar or a 5% acetic acid solution in a glass or plastic cup and cover.	Heinz Distilled White Vinegar

FERMENTED (Sour/Fermented)

Example	How to Prepare	Suggested Brands
Beer	Place in a glass or plastic cup and cover.	Guinness, or a stout or similar beer without hop aroma
Fermented grass	Fill 2-ounce glass jars half full with grass and seal tightly with screw-on lids. Leave in airtight container for 2 weeks to ferment. Serve in jar.	

GREEN / VEGETATIVE

Example	How to Prepare	Suggested Brands
Parsley water	Rinse and chop 25 g of fresh parsley. Add 300 mL of water and let sit for 15 minutes. Filter out the parsley. Serve one tablespoon of the water in a glass or plastic cup.	
"Le Nez du Café" – Vial #3, Garden Peas OR #4, Cucumber	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Cafe"
Scentone T100 – Vial #91, Cucumber	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	"Scentone" T100

NUTTY (Nutty / Cocoa)

Example	How to Prepare	Suggested Brands
Almonds and Walnuts, chopped	Chop the almonds and walnuts separately in blenders for 45 seconds. Combine equal amounts of the chopped nuts. Put approx. 30 g. in a plastic or glass cup, cover.	Diamond sliced almonds, Diamond shelled walnuts
Roasted hazelnuts	Place roasted hazelnuts in a glass or plastic cup and cover.	
Almond syrup	Place in a glass or plastic cup and cover.	Monin, Torani, DaVinci Gourmet
"Le Nez du Café" – Vial # 29 Roasted Hazelnut	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Café"
Scentone T100 – Vial #40, Hazelnut	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	"Scentone" T100

COCOA (Nutty / Cocoa)

Example	How to Prepare	Suggested Brands
Natural unsweetened cocoa powder	Mix ¼ teaspoon with 100 mL water in a glass or plastic container, cover.	Hershey's Cocoa Powder
"Le Nez du Café" – Vial #26, Dark Chocolate	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Cafe"
Scentone T100 – Vial #56, Dark Chocolate	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	"Scentone" T100

SPICE

Example	How to Prepare	Suggested Brands
Spices	Mix 0.25 g ground cinnamon + 0.25 g ground allspice + 0.25 g ground nutmeg + 0.06 g ground clove. Serve ¼ teaspoon of mixture in a glass or plastic cup. Cover.	
Pumpkin spice syrup	Place in a glass or plastic cup and cover.	Monin, Torani, DaVinci Gourmet
"Le Nez du Vin" – Vial # 41 (cinnamon) or #42 (clove)	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Vin"
Scentone T100 – Vial #76, Cinnamon ; or #79, Clove	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	"Scentone" T100

ROASTED

Example	How to Prepare	Suggested Brands
Dark Roasted Coffee (Agtron #35)	Place ground coffee in a plastic or glass cup and cover.	
"Le Nez du Café" – Vial # 34, Roasted coffee	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Cafe"
Scentone T100 – Vial #50, Roasted Coffee Bean	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	"Scentone" T100

CEREAL (Roasted)

Example	How to Prepare	Suggested Brands
Mix of breakfast cereals	Mix equal parts of puffed rice, corn flakes and oat breakfast cereals. Put in a blender and "pulse" blend into small particles. Place 1 tablespoon in a medium snifter. Cover.	General Mills, Kellogg's, Nestlé
"Le Nez du Café" – Vial # 22, Toast	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Café"
"Le Nez du Café" – Vial # 23, Malt	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Café"
Scentone T100 – Vial #48, Malt	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	"Scentone" T100

BURNT (Roasted)

Example	How to Prepare	Suggested Brands
Burnt peanuts	Preheat oven to 220°C. Place raw, blanched peanuts in a single layer on a baking sheet lined with parchment paper. Roast for 20 minutes. Peanuts will be burnt. Place 1 tablespoon in a medium snifter. Cover.	
Scentone T100 – Vial #49, Burnt rice	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	"Scentone" T100

TOBACCO (Roasted)

Example	How to Prepare	Suggested Brands
Cigarettes	Break cigarette and place 0.1 g tobacco in a medium snifter. Cover.	Camel (Turkish and Domestic blends), Marlboro, Pall Mall
"Le Nez du Café" – Vial # 33, Pipe tobacco	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Café"

CHEMICAL (Other)

Example	How to Prepare	Suggested Brands
Adhesive bandage	Place one plastic Band Aid adhesive bandage in a covered glass or plastic cup.	Band Aid
Iodine	Place ¼ cup iodine in a covered glass or plastic cup.	
"Le Nez du Café" – Vial # 35 – medicinal	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Cafe"

MUSTY/EARTHY (Other)

Example	How to Prepare	Suggested Brands
Commercial potting soil.	Put 20 g potting soil in a plastic or glass cup, cover.	Miracle-gro potting soil
"Le Nez du Café" – Vial # 1 – earthy	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Cafe"
Scentone T100 – Vial #92 – Mushroom	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	"Scentone" T100

WOODY (Other)

Example	How to Prepare	Suggested Brands
Popsicle sticks	Break popsicle sticks to fit in sample cups of any size. Cover with a plastic lid. This may be prepared in advance.	
"Le Nez du Café" – Vial # 6 – Cedar	One drop of oil on a cotton ball, place in a plastic or glass cup and cover.	Jean Lenoir "Le Nez du Café"

Get Involved with the SCA Coffee Value Assessment

There are multiple ways to engage with the SCA's Coffee Value Assessment (CVA), across courses, events, and special programs designed to support the system's early adopters and patrons.

Early Adopters receive important news, updates, and materials straight to their inboxes and are the first to learn about recently announced events, programs, and CVA developments. Head to sca.coffee/value-assessment to register for free as a CVA Early Adopter.

Learn more about the CVA at an SCA trade show or community event. SCA trade shows include World of Coffee (Europe, Asia, Middle East) and Specialty Coffee Expo (North America). Major industry events featuring hundreds of exhibitors, competitions, awards, social and networking opportunities, SCA trade shows regularly feature dozens of educational opportunities including lectures and workshops where attendees can learn and practice new skills and theory. SCA Community Events are small, focused educational events for specific communities within the specialty coffee industry with a tailored curriculum to promote personal and professional advancement—all the SCA's recent community events have covered key aspects of the CVA in their programming.

Attend a CVA Course for Cuppers, interactive sessions designed to introduce an experienced coffee cupper to the evolved cupping protocol and this new system for assessing a coffee's value, **or one of our series of CVA Theory Presentations,** intimate lectures or seminars designed to inform audiences about the theory of the Coffee Value Assessment. Learn more about all upcoming events and courses at sca.coffee/cva-events.

Become an official CVA Patron, which facilitates the SCA and Coffee Science Foundation's continued research and development of the CVA. For a low donation amount, a participating SCA member company or organization will receive two years continued acknowledgement of Patron status, plus a whole host of other exclusive benefits. Learn more and register your company's interest on sca.coffee/cva-patrons.

For more information about the SCA Coffee Value Assessment including ways to get involved, head to sca.coffee/value-assessment.

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Coffee
Association**