IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

ZIRCORE, LLC,

Plaintiff,

v.

STRAUMANN MANUFACTURING, INC. ET AL.,

Defendants.

Case No. 2:15-cv-01557-JRG-RSP

CLAIM CONSTRUCION MEMORANDUM OPINION AND ORDER

Before the Court is the opening claim construction brief of Zircore, LLC ("Plaintiff") (Dkt. No. 128, filed on August 19, 2016),[1] the response of Straumann Manufacturing, Inc., Straumann USA, LLC, and Dental Wings Inc. (collectively "Defendants") (Dkt. No. 138, filed on September 2, 2016), and the reply of Plaintiff (Dkt. No. 142, filed on September 9, 2016). The Court held a hearing on the issues of claim construction and claim definiteness on September 26, 2016. Having considered the arguments and evidence presented by the parties at the hearing and in their briefing, the Court issues this Order.

[1] Citations to the parties' filings are to the filing's number in the docket (Dkt. No.) and pin cites are to the page numbers assigned through ECF.

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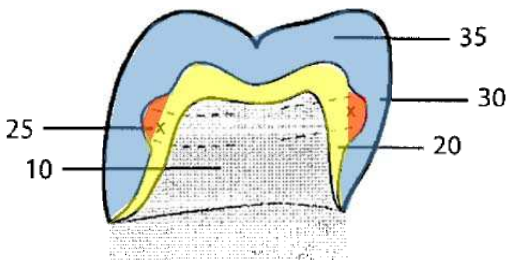
I. BACKGROUND

Plaintiff alleges infringement of three related U.S. Patents: No. 7,690,920 (the "'920 Patent"), No. 7,967,606 (the "'606 Patent"), and No. 8,751,031 (the "'031 Patent") (collectively, the "Asserted Patents"). The '920 Patent is entitled "High Strength Substructure Reinforcement for Crowns and Bridges." The application that issued as the '920 Patent was filed on April 15, 2005 and the patent issued on April 6, 2010. The '606 Patent is entitled "Process for Manufacturing Custom Crown Copings and Infrastructures." The application leading to the '606 Patent was filed on September 17, 2008 and the patent issued on June 28, 2011. The '606 Patent purports to be a continuation of the December 28, 2004 application that issued as U.S. Patent 7,445,409 and claims priority to three provisional applications, the earliest filed on February 6, 2004. The '031 Patent is entitled "System and Method for Mass Custom Manufacturing of Dental Crowns and Crown Components." The application leading to the '031 Patent was filed on December 30, 2008 and the patent issued on June 10, 2014. The '031 Patent purports to be a continuation-in-part of the '920 Patent's application and a continuation-in-part of the '606 Patent's application.

In general, the Asserted Patents are directed to technology for dental restorations, such as crowns and bridges. The technology of the '920 Patent can be generally understood with reference to Figure 2 of that patent, reproduced here and annotated by the Court. A crown (35, in blue) is formed about a coping (20, in yellow) that is placed over an abutment portion (10) in the patient's mouth. A protrusion (25, in red) that is

'920 Patent Figure 2

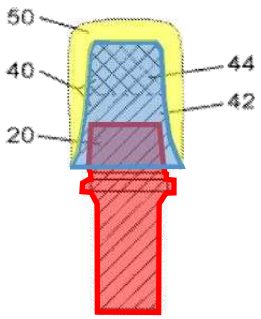


formed on, or as part of, the coping, supports the crown. *See* ’920 Patent col.4 l.64 – col.5 l.35.

The technology of the ’606 Patent can be generally understood with reference to Figures 2 and 5 of the patent, reproduced here and annotated by the Court. An abutment comprising an insert portion (20, in red) and a core portion (40, in blue) is customized in concert with a crown coping (50, in yellow). The customization involves scanning a model of the patient’s mouth with an insert portion installed and then designing and making the custom core portion and crown coping in conjunction. *See* ’606 Patent col.4 l.65 – col.6 l.34.

’920 Patent

Fig. 5



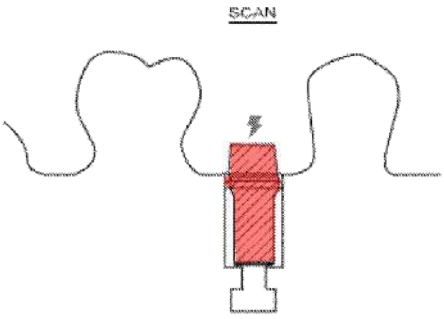
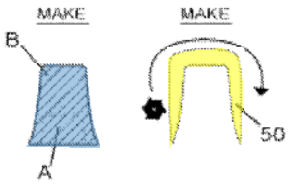
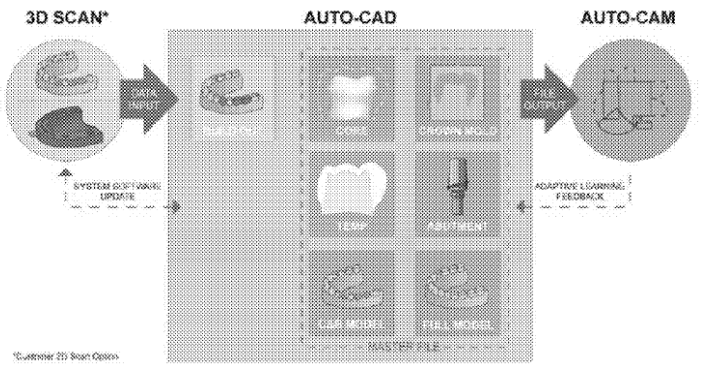


Fig. 2



The technology of the ’031 Patent can be generally understood with reference to Figure 9, reproduced here by the Court. Data regarding various components of a dental restoration, such as the abutment, coping, and crown, are collected and used to manufacture multiple components of the restoration in conjunction. *See* ’031 Patent col.7 l.59 – col.9 l.47.

’031 Patent Figure 9



The abstracts of the Asserted Patents provide:

’920 Patent:

> A reinforcement for a dental restoration substructure is provided. The reinforcement is a generally annular structure that protrudes from the body of the substructure generally near an occlusal portion of the restoration. The annular structure provides a support for veneering porcelain at the location of the greatest thickness of the porcelain and at the location where occlusal stress is applied, and fractures of veneering porcelain are commonly experienced.

’606 Patent:

> A method of manufacturing custom crown coping and infrastructures is provided. A metal portion (base) of an abutment is located in a model of a patient's mouth and the model is scanned. The data from the scan is then utilized to manufacture the ceramic portion of the abutment and the coping. In one embodiment, the coping and infrastructure is designed by first determining the shape and orientation of the final crown, subtracting a thickness for the crown from the shape to determine the shape and orientation of a coping, and subtracting a thickness for the coping to form the shape and orientation of an abutment.

’031 Patent:

> A Mass Custom Manufacturing System and methods are provided. A single master file is created for a restoration (or multiple restorations for a single patient) from a scan. Copings/cores, abutments and other companion pieces are designed using the master file through a deconstruction method allowing for simultaneous CAM of those pieces. A centralized system controls design and manufacturing, allowing the system to “learn” from feedback from the CAM operations of prior pieces and incorporate such feedback into the design phase.

Claim 1 of the ’920 Patent, Claim 1 of the ’606 Patent, and Claim 1 of the ’031 Patent, exemplary independent claims, recite as follows:

’920 Patent

1. A dental restoration comprising:

a one piece integrally formed substructure body having an open distal end, a closed proximal occlusal end and a side wall extending between said distal and proximal ends, said side wall including a generally uniform outer surface, said substructure body further including a support structure protruding from said outer surface of said side wall at a location spaced from, but generally near, said occlusal end of the substructure body, said support structure having a smooth shape and generally encircling the entire periphery of the substructure body, wherein the substructure body forms a hollow framework for receiving a dental preparation, and

a veneer formed over and contacting the outer surface of the side wall, the support structure and the occlusal end of said substructure body;

wherein said support structure is located generally proximate to the location of greatest occlusal stress and protrudes a distance from the surface of the side wall surface so as to provide support for said veneer that reduces the sheer stress exerted on said veneer.

’606 Patent

1. A method of manufacturing custom crown copings and infrastructures comprising the steps of:

preparing a three-dimensional model of a patient’s mouth;

fitting an implant abutment insert into the model;

storing data about the implant abutment insert standard size and shape in a file;

scanning the model while the implant abutment insert is in the model;

utilizing the implant abutment insert size data and data from said scanning step to determine and design a core to fit over the insert and at the same time determine and design a coping to fit over the core; and

manufacturing said core and said coping.

’031 Patent

1. A method of Mass Custom Manufacturing of dental crowns and crown components comprising the steps of:

obtaining a single master electronic file including a virtual model including a final external shape of a virtual ideal tooth replacement of a restoration for a patient;

utilizing said master file to manufacture in a coordinated, sequential, simultaneous or partly simultaneous and partly sequential, manner, from end-stage materials, two or more components of a single artificial tooth of a dental restoration; and

wherein said two or more components of said dental restoration mate together to make up a single artificial tooth of a dental restoration; or

wherein at least one of said two or more components is utilized to make one or more pieces that mates together with at least one other of said two or more components to make up a single artificial tooth of a dental restoration.

II. LEGAL PRINCIPLES

A. Claim Construction

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *Id.* at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc'ns Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at 861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim term is construed according to its ordinary and accustomed meaning as understood by one of

ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) ("There is a heavy presumption that claim terms carry their accustomed meaning in the relevant community at the relevant time.") (vacated on other grounds).

"The claim construction inquiry. . . begins and ends in all cases with the actual words of the claim." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). "[I]n all aspects of claim construction, 'the name of the game is the claim.'" *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) (quoting *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998)). First, a term's context in the asserted claim can be instructive. *Phillips*, 415 F.3d at 1314. Other asserted or unasserted claims can also aid in determining the claim's meaning, because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term's meaning. *Id.* For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id.* at 1314–15.

"[C]laims 'must be read in view of the specification, of which they are a part.'" *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). "[T]he specification 'is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.'" *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). But, "'[a]lthough the specification may aid the court in interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.'" *Comark*

Commc'ns, Inc. v. Harris Corp., 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. "[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The prosecution history is another tool to supply the proper context for claim construction because, like the specification, the prosecution history provides evidence of how the U.S. Patent and Trademark Office ("PTO") and the inventor understood the patent. *Phillips*, 415 F.3d at 1317. However, "because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes." *Id.* at 1318; *see also Athletic Alternatives, Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (ambiguous prosecution history may be "unhelpful as an interpretive resource").

Although extrinsic evidence can also be useful, it is "'less significant than the intrinsic record in determining the legally operative meaning of claim language.'" *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). Technical dictionaries and treatises may help a court understand the underlying technology and the manner in which one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not helpful. *Id.* Extrinsic evidence is "less reliable than the

patent and its prosecution history in determining how to read claim terms." *Id.* The Supreme Court recently explained the role of extrinsic evidence in claim construction:

> In some cases, however, the district court will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period. *See, e.g., Seymour v. Osborne*, 11 Wall. 516, 546 (1871) (a patent may be "so interspersed with technical terms and terms of art that the testimony of scientific witnesses is indispensable to a correct understanding of its meaning"). In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the "evidentiary underpinnings" of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 841 (2015).

B. Departing from the Ordinary Meaning of a Claim Term

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution."[2] *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

To act as his own lexicographer, the patentee must "clearly set forth a definition of the disputed claim term," and "clearly express an intent to define the term." *Id.* (quoting *Thorner*,

[2] Some cases have characterized other principles of claim construction as "exceptions" to the general rule, such as the statutory requirement that a means-plus-function term is construed to cover the corresponding structure disclosed in the specification. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee's lexicography must appear "with reasonable clarity, deliberateness, and precision." *Renishaw*, 158 F.3d at 1249.

To disavow or disclaim the full scope of a claim term, the patentee's statements in the specification or prosecution history must amount to a "clear and unmistakable" surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 ("The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope."). "Where an applicant's statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

C. Functional Claiming and 35 U.S.C. § 112, ¶ 6 (pre-AIA)[3]

A patent claim may be expressed using functional language. *See* 35 U.S.C. § 112, ¶ 6; *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1347–49 & n.3 (Fed. Cir. 2015) (en banc in relevant portion). Section 112, Paragraph 6, provides that a structure may be claimed as a "means . . . for performing a specified function" and that an act may be claimed as a "step for performing a specified function." *Masco Corp. v. United States*, 303 F.3d 1316, 1326 (Fed. Cir. 2002).

But § 112, ¶ 6 does not apply to all functional claim language. There is a rebuttable presumption that § 112, ¶ 6 applies when the claim language includes "means" or "step for" terms, and that it does not apply in the absence of those terms. *Masco Corp.*, 303 F.3d at 1326; *Williamson*, 792 F.3d at 1348. The presumption stands or falls according to whether one of

[3] Because the applications resulting in the patents-in-suit were filed before September 16, 2012, the effective date of the America Invents Act ("AIA"), the Court refers to the pre-AIA version of § 112.

ordinary skill in the art would understand the claim with the functional language, in the context of the entire specification, to denote sufficiently definite structure or acts for performing the function. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1372 (Fed. Cir. 2015) (§ 112, ¶ 6 does not apply when "the claim language, read in light of the specification, recites sufficiently definite structure" (quotation marks omitted) (citing *Williamson*, 792 F.3d at 1349; *Robert Bosch, LLC v. Snap-On Inc.*, 769 F.3d 1094, 1099 (Fed. Cir. 2014))); *Williamson*, 792 F.3d at 1349 (§ 112, ¶ 6 does not apply when "the words of the claim are understood by persons of ordinary skill in the art to have sufficiently definite meaning as the name for structure"); *Masco Corp.*, 303 F.3d at 1326 (§ 112, ¶ 6 does not apply when the claim includes an "act" corresponding to "how the function is performed"); *Personalized Media Communications, L.L.C. v. International Trade Commission*, 161 F.3d 696, 704 (Fed. Cir. 1998) (§ 112, ¶ 6 does not apply when the claim includes "sufficient structure, material, or acts within the claim itself to perform entirely the recited function . . . even if the claim uses the term 'means.'" (quotation marks and citation omitted)).

When it applies, § 112, ¶ 6 limits the scope of the functional term "to only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof." *Williamson*, 792 F.3d at 1347. Construing a means-plus-function limitation involves multiple steps. "The first step . . . is a determination of the function of the means-plus-function limitation." *Medtronic, Inc. v. Advanced Cardiovascular Sys., Inc.*, 248 F.3d 1303, 1311 (Fed. Cir. 2001). "[T]he next step is to determine the corresponding structure disclosed in the specification and equivalents thereof." *Id.* A "structure disclosed in the specification is 'corresponding' structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim." *Id.* The focus of the "corresponding

structure" inquiry is not merely whether a structure is capable of performing the recited function, but rather whether the corresponding structure is "clearly linked or associated with the [recited] function." *Id.* The corresponding structure "must include all structure that actually performs the recited function." *Default Proof Credit Card Sys. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1298 (Fed. Cir. 2005). However, § 112 does not permit "incorporation of structure from the written description beyond that necessary to perform the claimed function." *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

For § 112, ¶ 6 limitations implemented by a programmed general purpose computer or microprocessor, the corresponding structure described in the patent specification must include an algorithm for performing the function. *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1349 (Fed. Cir. 1999). The corresponding structure is not a general purpose computer but rather the special purpose computer programmed to perform the disclosed algorithm. *Aristocrat Techs. Austl. Pty Ltd. v. Int'l Game Tech.*, 521 F.3d 1328, 1333 (Fed. Cir. 2008).

D. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA)

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. A claim, when viewed in light of the intrinsic evidence, must "inform those skilled in the art about the scope of the invention with reasonable certainty." *Nautilus Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2129 (2014). If it does not, the claim fails § 112, ¶ 2 and is therefore invalid as indefinite. *Id.* at 2124. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. *Id.* at 2130. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *Id.* at 2130 n.10. "[I]ndefiniteness is a question of law and in effect part of claim construction." *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

When a term of degree is used in a claim, "the court must determine whether the patent provides some standard for measuring that degree." *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015) (quotation marks omitted). Likewise, when a subjective term is used in a claim, "the court must determine whether the patent's specification supplies some standard for measuring the scope of the [term]." *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005); *accord Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (citing *Datamize*, 417 F.3d at 1351).

In the context of a claim governed by 35 U.S.C. § 112, ¶ 6, the claim is invalid as indefinite if the claim fails to disclose adequate corresponding structure to perform the claimed functions. *Williamson*, 792 F.3d at 1351–52. The disclosure is inadequate when one of ordinary skill in the art "would be unable to recognize the structure in the specification and associate it with the corresponding function in the claim." *Id.* at 1352.

III. AGREED CONSTRUCTIONS

The parties have agreed to the following constructions set forth in their Joint Claim Construction Chart (Dkt. No. 148).

Term[4]	Agreed Construction
"distal end" • '920 Patent Claim 1	"end closest to the gum-line or root"
"proximal occlusal end" • '920 Patent Claim 1	"end closest to the biting surface"

[4] For all term charts in this order, the claims in which the term is found are listed with the term but: (1) only the highest level claim in each dependency chain is listed, and (2) only asserted claims identified in the parties' Joint Claim Construction Chart (Dkt. No. 148) are listed. The Court notes at least one discrepancy between a party's position as stated in the briefing and advocated at the hearing and as stated in the P.R. 4-5(d) chart. The parties' positions stated in this Order are from the P.R. 4-5(d) chart.

Term[4]	Agreed Construction
"sheer stress" • '920 Patent Claim 1	"force that is opposite but parallel to the force that is [exerted on said veneer]"
"generally encircling the entire periphery of the substructure body" • '920 Patent Claim 1	"generally surrounding the entire periphery of the substructure body by way of a single structure or multiple structures"
"generally proximate to the location of greatest occlusal stress" • '920 Patent Claim 1	plain and ordinary meaning
"protrudes a distance from the surface of the side wall surface so as to provide support for said veneer that reduces the sheer stress exerted on said veneer" • '920 Patent Claim 1	plain and ordinary meaning NOTE: "sheer stress" is a typographical error for "shear stress"
"subtracting a thickness" • '606 Patent Claims 11, 12	plain and ordinary meaning

Having reviewed the intrinsic and extrinsic evidence of record, the Court agrees with and adopts the parties' agreed constructions.

IV. CONSTRUCTION OF DISPUTED TERMS

A. U.S. Patent No. 7,690,920

A-1. "one piece integrally formed"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"one piece integrally formed" • '920 Patent Claim 1	plain and ordinary meaning **Alternative Construction:** • "formed as a single unit"	"[substructure body] formed from the same component"

The Parties' Positions

Plaintiff submits that the meaning of "one piece integrally formed" is clear and the term does not need to be construed. Dkt. No. 128 at 9. According to Plaintiff, the '920 Patent teaches

that the "one piece integrally formed" substructure body of the claim may be formed from multiple components. *Id.* at 9–10 (citing '920 Patent col.6 ll.15–21).

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '920 Patent figs.2, 3a, 3b, col.6 ll.15–21.

Defendants respond that the '920 Patent distinguishes an integral portion of a structure from a portion that is a separate component attached to the structure:

> the 'protrusion' of the instant invention may be designed as an ***integral portion*** of an infrastructure (as is shown and described herein with respect to coping 20 protrusion 25), ***or alternatively***, the 'protrusion' may be a ***separate component*** that is attached to or otherwise combined with an infrastructure.

Dkt. No. 138 at 9 (quoting '920 Patent col.6 ll.15–21 (emphasis added by Defendants)). According to Defendants, the patentee added "one piece integrally formed" (via Examiner Amendment) to the claims during prosecution and thereby restricted the claims to the described "integral portion" embodiment. *Id.*

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '920 Patent col.5 ll.14–16, col.5 ll.38–40, col.6 ll.15–21, col.6 l.53; '920 Patent File Wrapper January 15, 2010 Supplemental Notice of Allowability (Defendants' Ex. A, Dkt. No. 138-2).

Plaintiff replies that "integrally formed" means "formed as a single unit" rather than "from the same component." Dkt. No. 142 at 7.

Analysis

There issue in dispute here is whether the "one piece integrally formed substructure body" is necessarily formed from a single component. In the context of the '920 Patent, a substructure body is "integrally formed" if it is made as one component or if it is made as separate components that are integrated into one component.

The Court is not persuaded by Defendants' argument that the '920 Patent distinguishes "integral" from "attached or otherwise combined." The description relied on by Defendants states:

> Furthermore, it will be appreciated that the "protrusion" of the instant invention may be ***designed as an integral portion of an infrastructure*** (as is shown and described herein with respect to coping 20 protrusion 25), or alternatively, the "protrusion" ***may be a separate component that is attached to or otherwise combined with an infrastructure***.

'920 Patent col.6 ll.15–21 (emphasis added). The Court does not understand this to distinguish "integral" from "separately made then joined," as Defendants posit. Rather, the Court understands this to allow two ways in in which a protrusion may be "integrally formed" with the substructure. First, it can be "designed as an integral portion" of the substructure. And second, it can be designed as "a separate component" that is then integrated with the substructure (i.e., "attached to or otherwise combined with an infrastructure"). Defendants' proposed construction would exclude an expressly described exemplary embodiment. And "a construction that excludes a preferred embodiment is rarely, if ever, correct." *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 865 (Fed. Cir. 2004). Ultimately, the patent describes the invention as including two ways of integrally forming the substructure and, given that nothing of record indicates an intent to exclude integrally forming by connecting multiple components, the claims should be construed consistently with this description. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) ("'The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.'" (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

Accordingly, the Court construes "one piece integrally formed substructure body" as follows:

- "one piece integrally formed substructure body" means "substructure body formed as or into one piece."

A-2. "said side wall including a generally uniform outer surface"

Disputed Term	Plaintiff's Proposed Construction[5]	Defendants' Proposed Construction
"said side wall including a generally uniform outer surface" • '920 Patent Claim 1	"said external side portion of the substructure body extending between the distal end and the occlusal end including a "generally uniform outer surface", meaning an outer surface of the substructure body (other than the protruding support structure) which does not include any significant variation in contour at the external surface of the substructure body, and which can be any simple or complex shape desired, whether now known or hereafter discovered, and which is not necessarily smooth, symmetrical, or of uniform thickness" **Alternative Construction:** • "said side wall including a surface that does not include any significant variations in contour at the external surface of the substructure body, and which can be any simple or complex shape desired, and which is not necessarily smooth, symmetrical, or of uniform thickness"	"said side wall including a surface that does not include any significant variations in contour from the surface of the restoration for which it is a substructure" **Alternative Construction:** • indefinite.

The Parties' Positions

Plaintiff submits that what it means for a surface to be "generally uniform" is expressly defined in the '920 Patent. Dkt. No. 128 at 11–12 (citing '920 Patent col.5 ll.36–53, col.6 ll.32–39). According to Plaintiff, Defendants' proposed construction improperly—and meaningfully—truncates the definition set forth in the patent. *Id.* at 12. Specifically, Plaintiff argues that the patent allows a "generally uniform" surface that is not necessarily "smooth or even," "symmetrical," or of a "uniform thickness." *Id.* (quoting '920 Patent col.5 ll.44–53).

[5] Plaintiff's proposed construction presented in its briefing is the alternative construction presented in the parties' Joint Claim Construction Chart that was filed pursuant to Local Patent Rule 4-5(d). Dkt. No. 128 at 11; Dkt. No. 142 at 7–8, Dkt. No. 148-1 at 2–3.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: ’920 Patent col.5 ll.36–53, col.6 ll.32–39.

Defendants respond that their proposed construction, and not Plaintiff’s, comports with the ’920 Patent’s definition of “generally uniform” as used in the context of the claims:

> [T]he phrase ‘generally uniform’ to describe the outer surface of the body of coping 20 of the instant invention refers to the fact that the outer surface of coping 20 generally (***other than protrusion 25***) does not include any significant variations in contour from those variations typically found in conventional coping structures which generally follow the contours of (i.e. are concentric with) the surface of the restorations for which they are sub-structures.

Dkt. No. 138 at 10 (quoting ’920 Patent col.5 ll.36–44 (emphasis added by Defendants)). Defendants argue that if “generally uniform” is not a measure of the surface of the substructure relative to the surface of the restoration then the term renders claims indefinite. *Id.* at 11. This, according to Defendants, is because “generally uniform” is a term of degree, and the patent’s only guidance on how to determine whether a substructure surface is generally uniform is to examine how the substructure surface varies relative to the restoration surface. *Id.* at 11–12.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: ’920 Patent col.5 ll.36–44; ’920 Patent File Wrapper September 10 Amendment (Defendants’ Ex. B, Dkt. No. 138-3).

Plaintiff replies that while the surface of the wall may follow the contour of the final restoration in some instances, it need not do so. Dkt. No. 142 at 8.

Plaintiff cites further **intrinsic evidence** to support its position: ’920 Patent figs.3a, 3b; ’920 Patent File Wrapper September 10 Amendment (Defendants’ Ex. B, Dkt. No. 138-3).

Analysis

The issue in dispute here is whether a “generally uniform outer surface” of a side wall necessarily follows the contour of the surface of the restoration. It does.

The Court agrees with the parties that this term is expressly defined in the ’920 Patent. The patent provides:

> It will be appreciated that the use of ***the phrase “generally uniform” to describe the outer surface of the body of coping 20 of the instant invention refers to the fact that the outer surface of coping 20 generally (other than protrusion 25) does not include any significant variations in contour from those variations typically found in conventional coping structures which generally follow the contours of (i.e. are concentric with) the surface of the restorations for which they are sub-structures. Such contours often include various asymmetrical and irregular shapes that may include both concave and convex patterns in a single structure***. Therefore, the generally uniform surface does not require the surface to be smooth or even, or of any standardized or symmetrical shape or form. It will further be appreciated that reference to the outer surface of the body of coping 20 as being generally uniform is not intended to require a uniform thickness for coping 20, even though the embodiment of coping 20 shown in FIG. 2 does include a generally uniform thickness.

’920 Patent col.5 ll.36–53 (emphasis added). While the Court agrees with Plaintiff that under this definition a “generally uniform” outer surface “can be any simple or complex shape desired, and which is not necessarily smooth, symmetrical, or of uniform thickness,” that does not mean that every “simple or complex shape desired” is “generally uniform.” Rather, the shape of the outer surface is irrelevant, provided the outer surface (other than the protrusion) generally tracks the surface of the restoration.

Accordingly, the Court construes “said side wall including a generally uniform outer surface” as follows:

- “said side wall including a generally uniform outer surface” means “said side wall including an outer surface that, other than the protruding support structure, does not include any significant variations in contour from those variations typically found in conventional coping structures which generally follow the contours of (i.e. are concentric with) the surface of the restorations for which they are sub-structures.”

A-3. "protruding from said outer surface of said side wall"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"protruding from said outer surface of said side wall" • '920 Patent Claim 1	"protruding (projecting) from said outer surface of said side wall, as an integral portion of the infrastructure from which it protrudes, or alternatively, as a separate component that is attached to or otherwise combined with the infrastructure, and having any shape including but not limited to bulges, power-swells, tumors, bumps, blobs, raised protuberances, etc."	"having a shape that significantly varies from the contour of the side wall in a manner that does not generally follow the contour of the surface of the final restoration" **Alternative Construction:** • indefinite

The Parties' Positions

Plaintiff submits that the '920 Patent defines the protrusion of the claims. Dkt. No. 128 at 13 (quoting '920 Patent col.6 ll.15–24). Plaintiff further submits that what it protrudes from, the "said outer surface of said side wall," is readily understood without construction. *Id.* This, Plaintiff argues, is evinced by each side's incorporation of "side wall" into the proposed constructions. *Id.* And, Plaintiff argues, "outer surface" appears elsewhere in the claim and is defined in the patent as "the outer contour shape of the coping." *Id.* at 13–14 (citing '920 Patent col.7 ll.3–5). According to Plaintiff, Defendants' proposed construction improperly injects "significantly varies" and "does not generally follow the contour of the surface of the final restoration" limitations into the claims. *Id.* at 14. Plaintiff submits that the patent discloses an embodiment in which the "support structure" that is "protruding" generally follows the contour of the surface of the final restoration. *Id.* (citing '920 Patent figs. 1, 3a, col.7 ll.34–36).

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '920 Patent figs.1, 3a, col.6 ll.15–24, col.7

ll.3–5, col.7 ll.34–36. **Extrinsic evidence**: *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("protrude") (Plaintiff's Ex. 4, Dkt. No. 128-4).

Defendants respond that the support structure that protrudes from the side wall must not generally follow the contours of the restoration surface else it would not be "protruding." Dkt. No. 138 at 12–13. This understanding, according to Defendants, naturally follows the '920 Patent's definition of what it means for a substructure surface to be generally uniform. *Id.* Defendants further respond that, during prosecution, patentee explained that certain prior-art references did not disclose a protruding support structure because those references disclosed only generally uniform surfaces. *Id.* at 13. As Defendants argued with respect to the "generally uniform" term, they argue that if "protruding" is not defined in relation to the surface of the restoration, the "protruding" term would render claims indefinite as there would be no way to determine whether a region of the side-wall surface was a protrusion or just a generally uniform variation. *Id.* at 14.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '920 Patent figs.3a, 3b, col.4 ll.45–46, col.5 ll.36–44, col.7 ll.46–49; '920 Patent File Wrapper September 10 Amendment (Defendants' Ex. B, Dkt. No. 138-3), May 13, 2009 Office Action (Defendants' Ex. E, Dkt. No. 138-6); U.S. Patent 5,342,201[6] (excerpts) (Defendants' Ex. C, Dkt. No. 138-4); U.S. Patent No. 5,810,590[7] (excerpts) (Defendants' Ex. D, Dkt. No. 138-5).

[6] U.S. Patent 5,342,201 to Oden is cited on the face of the '920 Patent. '920 Patent, at [56] References Cited.

[7] U.S. Patent No. 5,810,590 to Fried et al. is cited on the face of the '920 Patent. '920 Patent, at [56] References Cited.

Plaintiff replies that it would be improper to rely on the ’920 Patent’s definition of “generally uniform” to define the protrusion as the protrusion is “excluded in the parenthetical” of the definition. Dkt. No. 142 at 9.

Plaintiff cites further **intrinsic evidence** to support its position: ’920 Patent fig.3b, col.5 l.39.

Analysis

The issue here is whether the support structure “protruding from said outer surface of said side wall” necessarily deviates from the “generally uniform” nature of the outers surface. It does.

The protruding substructure of the claims is defined in the ’920 Patent in the context of the “generally uniform” outer surface. As set forth above, a “generally uniform” outer surface of the substructure body’s side wall generally tracks the surface of the restoration. The protruding substructure is that part of the surface that does not qualify as “generally uniform”—it is that portion of the side wall’s surface that does not generally track the restoration surface. As with the side wall’s surface, the shape of the protrusion is irrelevant so long as it protrudes from the side wall’s outer surface and thereby does not track the restoration’s surface. ’920 Patent col.5 l.36 – col.6 l.24. Specifically, the patent provides:

> the terms “protrusion” and “protruding” are intended to include, but not be limited to, any convex shape that is not a coincident concentric duplicate shape of the preparation; any complex amplification of shape that is not just a convex derivative of the shape of the preparation; any shape having a concave approach from each side approach to an amplified area of protrusion that can not be described in simple harmonics, but only complex wave form; any superseding amplification of form that is not accidental or rendered for strictly artistic purpose; any concentric enlargement that is disproportionately distributed toward the superior (non-apical) portion of the long axis of the preparation; any asymmetrical appendage added to a design by computer generated pre-made shape or file added for specific structural considerations of subsequent materials added to a restoration infrastructure.

Id. at col.5 l.67 – col.6 l.15.

Accordingly, the Court construes "protruding from said outer surface of said side wall" as follows:

- "protruding from said outer surface of said side wall" means "having a shape that extends out from the side wall's outer surface and is not generally uniform with the surface of the restoration."

A-4. "veneer"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"veneer" • '920 Patent Claim 1	Plain and ordinary meaning. **Alternative Construction:** • "a coating or over-structure material"	"porcelain or ceramic layer that is [formed over …]"

The Parties' Positions

Plaintiff submits that "veneer" is well understood in the art and does not need to be explained to one of ordinary skill in the art. Dkt. No. 128 at 16. Plaintiff further submits that under the customary meaning of "veneer" in the art, it is not limited to "porcelain" or "ceramic," as Defendants' contend. *Id.* And, Plaintiff submits, the '920 Patent specifically states that "the materials used to manufacture the substructure (as well as the veneer) of the instant invention are not limited to those described herein." *Id.* (quoting '920 Patent col.8 ll.30–33). Finally, Plaintiff submits that "veneer" was described as an "overstructure" in the course of prosecuting the '920 Patent. *Id.*

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '920 Patent col.8 ll.30–33; '920 Patent File Wrapper July 21, 2008 Interview Summary (Plaintiff's Ex. 5, Dkt. No. 128-5). **Extrinsic**

evidence: *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("veneer") (Plaintiff's Ex. 25, Dkt. No. 128-25).

Defendants respond that "veneer" in the '920 Patent is used only to refer to porcelain or ceramic layers and that "the word 'coating' appears nowhere in the patent." Dkt. No. 138 at 14–15. Defendants further respond that during prosecution, the patentee equated "veneer" with "porcelain veneer." *Id.* And, Defendants contend, while a "veneer" may be a kind of over-structure, not all over-structures are veneers. *Id.* at 15. Thus, they conclude, construing veneer as an over-structure would improperly broaden the scope of the claims. *Id.*

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '920 Patent File Wrapper December 17, 2008 Amendment (Plaintiff's Ex. 6, Dkt. No. 128-6).

Plaintiff replies to reiterate that a "veneer" may be of a material other than ceramic or porcelain. Dkt. No. 142 at 9.

Analysis

The primary issue here appears to be whether a veneer is necessarily limited to "porcelain or ceramic." It is not.

To begin, the Court does not discern a difference between a "coating" and a "layer" in the context of a "veneer formed over and contacting the outer surface." And the Court agrees with Defendants that not every "over-structure" is a veneer.

Not all "veneers" are porcelain or ceramic. While it may be that every exemplary embodiment of a veneer in the '920 Patent is porcelain or ceramic, that alone is not enough to limit "veneer" to those materials. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (en banc) ("we have expressly rejected the contention that if a patent describes only a single

embodiment, the claims of the patent must be construed as being limited to that embodiment"); *Thorner v. Sony Comput. Entm't Am. LLC*, 669 F.3d 1362, 1366 (Fed. Cir. 2012) ("It is likewise not enough that the only embodiments, or all of the embodiments, contain a particular limitation. We do not read limitations from the specification into claims; we do not redefine words. Only the patentee can do that."); *SRI Int'l v. Matsushita Elec. Corp.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc) ("The law does not require the impossible. Hence, it does not require that an applicant describe in his specification every conceivable and possible future embodiment of his invention."). Indeed, the patent expressly allows for other materials: "Further, it will be appreciated that the materials used to manufacture the substructure (as well as the veneer) of the instant invention are not limited to those described herein." '920 Patent col.8 ll.30–33.

The prosecution history statements Defendants argue are disclaimer of all but porcelain (and ceramic) veneers do not rise to the level of disclaimers. The Court perceives an error in the prosecution-history characterization of the December 17, 2008 amendments. While the patent practitioner may have characterized the amendments as, "the independent claims of the instant application have been amended to now positively recite the porcelain veneer that is formed about the body," inspection of the actual amendments leads to a contrary conclusion. '920 Patent File Wrapper December 17, 2008 Amendment at 4–11, Dkt. No. 128-6 at 4–12. Pending independent claim 11 was amended to include "a porcelain veneer about said body" while the other pending independent claims (1, 9, 13) were amended to include "a veneer about said body"—no recitation of "porcelain." *Id*. That is, only pending claim 11 was amended as characterized. That the term "porcelain" was added to claim 11—and not to the other claims—strongly suggests that the patentee did not intend to limit veneer to a particular material. *See Phillips v. AWH Corp*., 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc) (noting that the use of the term "steel baffles"

"strongly implies that the term 'baffles' does not inherently mean objects made of steel"). Given that the patent clearly states that the veneer may be of materials other than what is described in the patent, '920 Patent col.8 ll.30–33, and that there is no discernable reason that a restriction to "porcelain" was meant to overcome prior art during prosecution, the Court holds that the characterization of the amendments is erroneous and does not give rise to a disclaimer. *See Biotec Biologische Naturverpackungen GmbH v. Biocorp, Inc.*, 249 F.3d 1341, 1348 (Fed. Cir. 2001) ("A person of reasonable intelligence would not be misled into relying on the erroneous statement [in the prosecution history], for it is contrary not only to the plain language of the claims and the specification, but also to other statements in the same prosecution document.").

The Court's understanding of "veneer" comports with the customary meaning of "veneer." Specifically, the extrinsic evidence establishes that veneers of materials other than porcelain or ceramic are used in the art. *Merriam Webster's Collegiate Dictionary* 1387 (11th ed. 2003) (defining veneer, in relevant part, as "a plastic or porcelain coating bonded to the surface of a cosmetically imperfect tooth"), Dkt. No. 128-25 at 2.

Accordingly, the Court construes "veneer" as follows:

- "veneer" means "layer of material."

A-5. "coping"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"coping" • '920 Patent Claim 5	"an intermediate structure disposed over an abutment or natural tooth"	"layer supporting the veneer"

The Parties' Positions

Plaintiff submits that the '920 Patent explains a "coping" as something designed to fit over an abutment or a prepared portion of a tooth. Dkt. No. 128 at 19. According to Plaintiff,

Defendants' proposed construction improperly requires the "coping" to support the veneer and improperly requires the "coping" to be a layer. *Id.* Plaintiff submits the patent describes that which supports the veneer as the protrusion which is the "support structure." *Id.* And Plaintiff submits that it is known in the art that not all copings require a veneer. *Id.* at 19–20 (citing *Mosby's Dental Dictionary* (2004)).

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '920 Patent col.4 ll.9–13, col.4 l.65 – col.5 l.1, col.5 ll.26–29, col.7 ll.22–23. **Extrinsic evidence**: *Mosby's Dental Dictionary* (2004) ("coping") (Plaintiff's Ex. 8, Dkt No 128-8).

Defendants respond that "coping" is described in the '920 Patent as a "layer." Dkt. No. 138 at 16 (citing '920 Patent col.4 ll.9–13). Defendants further respond that Claim 1 requires the veneer to contact the outer surface of the substructure body and that Claim 5 requires the substructure body to comprise a "coping" and therefore the veneer must be supported by the coping. *Id.*

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '920 Patent col.4 ll.9–13, col.5 ll.18–19.

Plaintiff replies that while the '920 Patent refers to the coping as a layer in one embodiment, it refers to the coping as a structure throughout the specification. Dkt. No. 142 at 3. Plaintiff further replies that it is the protrusion that supports the veneer and not all surfaces of the coping support the veneer. *Id.*

Plaintiff cites further **intrinsic evidence** to support its position: '920 Patent col.7 l.66.

Analysis

The parties dispute whether a "coping" is a "layer" and whether a "coping" necessarily supports a veneer. With respect to whether a coping is a layer, the Court determines that a coping may be used as a layer in that it is designed to cap or cover something, but a coping alone is not necessarily a layer. With respect to whether a coping necessarily supports a veneer, the Court determines that a coping may be used to support a veneer, but a coping alone does not necessarily support a veneer.

A "coping" is a covering or a cap. Claim 4 of the '920 Patent expresses that the "coping" is "adapted to be positioned over a preparation." And the patent describes that the "coping" fits over other structures. *See, e.g.*, '920 Patent col.4 ll.65–67 ("the implant includes abutment portion 10 over which thin coping 20 is fit"). This comports with the customary meaning of the term in the art. *Mosby's Dental Dictionary* 137 (2004) (defining "coping," in relevant part, as "a thin metal covering or cap over a prepared tooth" and "a casting placed over an implant abutment"), Dkt. No. 128-8 at 2. That is, a "coping" is a structure that is placed over some other structure—it is a covering or cap.

The "coping" of Claim 5 does not necessarily support the veneer. To begin, the Court agrees with Defendants that Claim 1, and therefore Claim 5, requires a veneer "formed over and contacting the outer surface of the side wall" of the substructure body. The Court also agrees that Claim 5 requires that the "substructure body comprises a coping." But that a substructure body "comprises" a coping does not preclude the substructure body having other features that support the veneer. Indeed, Claim 1 requires a "support structure" "to provide support for said veneer." The patent also describes exemplary embodiments in which the protrusion is supporting the veneer. *See, e.g.*, '920 Patent, at [57] Abstract (the protruding substructure "provides a support

for veneering porcelain"), col.5 ll.25–29 ("protrusion 25 is located in close proximity to (right under in the shown embodiment) this high stress region to provide a contact region and support for the veneering porcelain of crown 30"). And nothing in the extrinsic evidence of record establishes that a coping necessarily supports a veneer.

Accordingly, the Court construes "coping" as follows:

- "coping" means "covering or cap."

A-6. "subtracting"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"subtracting" • '920 Patent Claim 20	"using an 'outside-in' approach, deconstructing to a desired shape" **Alternative Construction:** • "deconstructing to a desired shape"	plain and ordinary meaning

The Parties' Positions

Plaintiff submits that "subtraction" is used in the '920 Patent other than according to its ordinary meaning. Dkt. No. 128 at 20. Specifically, Plaintiff contends, "subtracting" in the context of determining the shape of a substructure body refers to starting with "the desired shape for the restoration and then subtracting away or deconstructing from that shape to leave the desired substructure shape." *Id.* (quoting '920 Patent col.8 ll.4–8 (Plaintiff's modifications omitted)). This, according to Plaintiff, is distinct from a "simple mathematical subtraction" and the term should be clarified for the jury. *Id.* at 20–21.

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '920 Patent figs.1, 2, 3a, 3b, col.8 ll.4–25.

Defendants respond that because the "subtracting" is from a shape, there is no risk that a jury will view it as a simple mathematical subtraction calculation. Dkt. No. 138 at 17. Rather, according to Defendants, the entirety of the surrounding claim language makes clear that "subtracting" refers to subtracting "layers" from the final desired shape. *Id.* Defendants object to Plaintiff's proposed construction as failing to clarify the claim scope as it introduces "outside-in" and "deconstruction"—concepts that are not readily understood. *Id.*

Plaintiff replies that "subtracting" is not limited to removing layers from a shape to get a smaller version of the shape, but includes removing portions of a shape to get a smaller, different shape—i.e., deconstructing to a desired shape. Dkt. No. 142 at 10.

Analysis

It appears that the dispute here is whether "subtracting from a final desired shape for the restoration" necessarily requires removing layers from the "final desired shape for the restoration." It does not.

To begin, the Court does not agree with Defendants implicit assumption that the final desired shape is comprised of "layers." Rather, the layers of the restoration are determined based on the desired shape for the restoration. Even if the shape was described mathematically as a sum of layers, the '920 Patent describes exemplary software that "embellishes or diminishes certain key areas . . . to design the final substructure shape." '920 Patent col.8 ll.19–21, *see also*, *id*. at col.2 ll.60–66 (describing software that allows one to "distort the shape in one/multiple vanishing points"), col.3 ll.25–32 ("the part of the final [restoration] shape that is subtracted is determined to maximize the aesthetic appearance of the final restoration"), col.6 ll.25–39 (noting the aesthetic benefits of having a thicker veneer at the top of the restoration than at the bottom). Thus, the subtraction is not limited to removing layers, but includes removing points, areas, and

parts. Importantly, to the extent that Defendants intend their argument to limit the meaning of "subtracting" to removal of generally uniform thickness from the entirety of the shape, it is unclear how one would account for the protruding support structure. "Subtracting" is not limited to removing layers, it refers to removing portions, be they layers, parts of layers, or otherwise, from the final shape.

That said, Plaintiff's proposed construction does not clarify claim scope for the jury. The term "deconstructing" is no more clear than "subtracting."

Accordingly, the Court construes "subtracting" to mean:

- "subtracting" means "removing portions."

A-7. Alleged Product-By-Process Claims 15, 16, 19–21

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
• '920 Patent Claim 15	not product-by-process	product-by-process
• '920 Patent Claim 16		
• '920 Patent Claim 19		
• '920 Patent Claim 20		
• '920 Patent Claim 21		

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits that Defendants have neither proposed a construction for these claims nor contended that they are indefinite, and therefore that there is no claim-construction dispute. *See* Dkt. No. 128 at 21.

Defendants respond that Claims 15, 16, 19, 20, and 21 define the restoration in part by the process used to manufacture the restoration, and therefore the claims are product-by-process

claims. Dkt. No. 138 at 17–18. Specifically, Defendants contend that Claim 15 defines the restoration as having a substructure with a shape "determined through the use of a software application" and Claim 20 defines the restoration as one that is "milled." *Id.* at 18.

Plaintiff replies that claim construction is not the appropriate vehicle for resolving whether these claims are product-by-process claims. Dkt. No. 142 at 10. Plaintiff further replies that the claims cannot be product-by-process claims "as they contain structural limitations" *Id.* (citing *Union Carbide Chemicals & Plastics Tech. Corp. v. Shell Oil Co.*, 308 F.3d 1167 (Fed. Cir. 2002); *Hazani v. U.S. Intern. Trade Comm'n*, 126 F.3d 1473 (Fed. Cir. 1997)).

Analysis

The issue here is whether Claims 15, 16, 19, 20, and 21 are product-by-process claims. They are.

Each of Claims 15, 16, 19, 20, and 21 include a limitation that defines the restoration in part by a process to produce it. Specifically, Claim 15, and its dependent claims, require that the shape of the restoration's substructure body "is determined through use of a software application" and Claim 21 requires that the restoration is "milled." These limitations are not structural characteristics of the restoration, they are limitations that define the restoration by the steps taken to form the restoration. Thus, the claims are product-by-process claims. *See SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1313 (Fed. Cir. 2006) ("A product-by-process claim is one in which the product is defined at least in part in terms of the method or process by which it is made." (quotation marks omitted)).

Plaintiff posits that a claim to a product that includes purely structural limitations in addition to reference to process steps by which the structure was formed cannot be a product-by-process claim. The Court disagrees. The Federal Circuit has stated that a claim to a product

defined "at least in part" by the process for making it is a product-by-process claim. *Id*. (quoting *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 158 (1989)). The cases cited by Plaintiff do not suggest otherwise. For example, in *Union Carbide Chemicals & Plastics Tech. Corp. v. Shell Oil Co.*, the Federal Circuit held a claim was not a product-by-process claim not because the claim also included clearly structural limitations, but because the limitation at issue described a capability of the product—it was "characterizable by an efficiency equation." 308 F.3d 1167, 1177–79 (Fed. Cir. 2002). The court there distinguished such language from language such as "determined from the efficiency equation"—the "determined from" language denotes a product defined, at least in part, by a process step instead of by a capability. *Id*. Likewise, *Hazani v. U.S. Intern. Trade Comm'n*, rejected a product-by-process interpretation because the limitation at issue "read in context, describes the product more by its structure than by the process used to obtain it," not because the claim also had other, clearly structural, limitations. 126 F.3d 1473, 1479 (Fed. Cir. 1997).

Accordingly, the Court construes Claims 15, 16, 19, 20, and 21 as product-by-process claims.

B. U.S. Patent No. 7,967,606

B-1. "three-dimensional model," "model," and "scanning"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"three-dimensional model" / "model" • '606 Patent Claims 1, 12	"a physical object or a mathematical or graphical representation of an object" **Alternative Construction:** • "physical or virtual three-dimensional model"	"physical three-dimensional model"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"scanning" • '606 Patent Claim 1	"obtaining data about a physical object or mathematical or graphical representation of an object" **Alternative Construction:** • "obtaining data about the model"	plain and ordinary meaning

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits that neither "model" nor "scanning," as those terms are used in the claims, are necessarily physical. Dkt. No. 128 at 21–24. Specifically, Plaintiff contends that the ordinary meaning of "model" encompasses a virtual model, i.e., a "mathematical or graphical representation[s] of a real-world situation or object." *Id.* at 21–22 (quoting *Microsoft Computer Dictionary* 344 (5th ed. 2002), Dkt. No. 128-9 at 2). And Plaintiff contends that "scanning" a model encompasses software obtaining data from a virtual model. *Id.* at 23–24.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '606 Patent col.5 ll.32–38. **Extrinsic evidence**: *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("model") (Plaintiff's Ex. 10, Dkt. No. 128-10); *Microsoft Computer Dictionary* (5th ed. 2002) ("model") (Plaintiff's Ex. 9, Dkt. No. 128-9); *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("scan") (Plaintiff's Ex. 26, Dkt. No. 128-26).

Defendants respond that the only three-dimensional model disclosed in the '606 Patent is a physical model. Dkt. No. 138 at 18–19. Defendants further respond that the patent describes that the "instant invention" uses a physical model and a physical scanner:

> the manufacturing method of ***the instant invention*** begins with the purchase of ***the metal portion of the abutment from a manufacturer***. . . . the metal portion of the abutment, which ***is located in the model, is scanned***.

Id. at 19–20 (quoting ’606 Patent col.4 l.67 – col.5 l.5 (emphasis added by Defendants)). And, Defendants contend, “scanning”—under its ordinary meaning—is a physical process. *Id.* at 20. This, according to Defendants, is evinced by the dictionary definition of scanning: “to examine systematically (***as by passing a beam of radiation over or through***) in order to obtain data esp. for display or storage <***scanned the patient’s heart***> <***radar ~s the horizon***> <***~ the photos into the computer***>.” *Id.* (quoting *Merriam Webster’s Collegiate Dictionary* 1512–13 (11th ed. 2003), Dkt. No. 128-26 at 2–3 (emphasis added by Defendants)).

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: ’606 Patent col.2 ll.50–53, col.3 ll.25–26, col.4 l.67 – col.5 l.5, col.5 ll.9–11. **Extrinsic evidence**: *Merriam Webster’s Collegiate Dictionary* (11th ed. 2003) (“scan”) (Plaintiff’s Ex. 26, Dkt. No. 128-26).

Plaintiff replies that instead of limiting the invention to the description, the patent notes that “the disclosed embodiment is merely exemplary of the principles of the invention, which may be embodied in various forms.” No. 142 at 11. Specifically, Plaintiff contends, the invention includes virtual models and scanners—it is not limited to physical models and scanners. *Id.* at 10–11.

Plaintiff cites further **intrinsic evidence** to support its position: ’606 Patent col.3 ll.17–29, col.4 ll.41–45.

Analysis

The issue in dispute here is whether the “three-dimensional model” and “scanning” limitations are necessarily physical. They are.

"Scanning" is described in the patents as a physical process and the extrinsic evidence of record establishes that it is a physical process. That is, the Court understands the plain and ordinary meaning of "scanning," in the context of the '606 Patent, to refer to a physical process to collect information about the real world for use on a computer. For example, in describing the prior-art approach to manufacturing the abutment core and the coping, the patent provides that a "stone model of the patient's mouth is prepared from a master impression," a lab technician will then "fit the metal portion of the abutment into the appropriate implant analog location in the model," and "modifies the ceramic portion [of the abutment] by grinding down the factory sintered Zirconia ceramic piece" to the appropriate shape, and scans the modified abutment "which is located in the model." '606 Patent col.1 ll.53–67. The "data from the scan" is used to make the coping. *Id*. at col.1 l.67 – col.2 l.4. Here, the physical nature of the model and scanning is clear, for example, from the material of the model and abutment ("stone" model, "metal" and "ceramic" abutment), the method of preparing the model (from an "impression"), and the method of shaping the abutment ("grinding"). The Court similarly understands the "model" and "scanning" of the described embodiments to be physical. For example, the patent provides an overview of the process: a "lab technician will fit the metal portion of the abutment in the appropriate location in the model," "the model will then be scanned" to collect data, and that data will be used with "***stored*** data" about the abutment to design the core and coping. *Id*. at col.49–62 (emphasis added); *see also, id*. at col.4 l.65 – col.5 l.21 (same), Claim 1 ("storing" data about the abutment, "scanning" the model to acquire data, and using the stored and scanned data to design the core and coping). This contrast between ***stored*** data and scan data strongly suggest that the scan data was not already stored in a computer—it is data acquired from the real world

for use in a computer. “Scanning” is the process of acquiring that real-world data—a physical process.

The Court’s understanding of “scanning” comports with the customary meaning of “scanning.” Specifically, the extrinsic evidence of record establishes that “scanning” is a physical process. “Scan” is defined in relevant part as: “to examine systematically (as by passing a beam of radiation over or through) in order to obtain data for display or storage <scanned the patient’s heart> <radar [scans] the horizon> <[scans] the photos into the computer>.” *Merriam Webster’s Collegiate Dictionary* 1107–08 (11th ed. 2003), Dkt. No. 128-26 at 2–3. Notably, this definition does not refer to manipulating data to obtain data, as is encompassed by Plaintiff’s advocated understanding of “scanning,” but uniformly refers to examining physical objects to obtain data.

Because the Court determines that “scanning” is a physical act and because the described three-dimensional models are all physical models, the Court determines that the models of the ’606 Patent are physical models. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) (“‘The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.’” (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

Accordingly, the Court determines that “scanning” has its plain and ordinary meaning, which does not encompass “obtaining data about a mathematical or graphical representation of an object,” and requires no further construction. The Court construes “three-dimensional model” as follows:

- “three-dimensional model” means “physical three-dimensional model.”

B-2. "implant abutment insert," "core," and "core blank"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"implant abutment insert" • '606 Patent Claim 1	"a reference of known standard size and shape for use in design of a core or abutment and coping"	"lower insert portion of a two-piece abutment"
"core" • '606 Patent Claims 1, 12	"the central or foundational part of a tooth restoration; abutment"	"upper portion of a two-piece abutment"
"core blank [material]" • '606 Patent Claim 5	"a form for a core component from which a core of a tooth restoration is manufactured"	"cylindrical block with an axis running through it"

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits that the '606 Patent expressly contemplates one-piece abutments in that it teaches "the material and process allow one piece ceramic/zirconium abutments." Dkt. No. 128 at 22, 24 (quoting '606 Patent col.2 ll.43–44). Plaintiff further submits that the "implant abutment insert" is simply a design reference, and does not necessarily support the restoration or serve as a mounting point for the core. *Id.* at 22–23. According to Plaintiff, the patentee used the terms "core" and "abutment" interchangeably in prosecution and such use comports with the ordinary meaning of the term. *Id.* at 25 (citing '606 Patent File Wrapper November 16, 2010 Amendment 9, Dkt. No. 128-11 at 3; *Mosby's Dental Dictionary* 137 (2004), Dkt. No. 128-12 at 2). Plaintiff further contends that the embodiment of Figures 6a and 6b of the patent show that the core is milled from a "core blank" and that such a milled product would be the entire abutment. *Id.* at 24. And, Plaintiff submits, the "core blank" may be of any shape or dimension, and specifically is not limited to a cylindrical block. *Id.* at 27–28.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '606 Patent figs.2–5, 6a, 6b, col.2 ll.41–44, col.5 ll.30–38, col.5 l.42 – col.6 l.18; '606 Patent File Wrapper November 16, 2010 Amendment (excerpts) (Plaintiff's Ex. 11, Dkt. No. 128-11). **Extrinsic evidence**: *Mosby's Dental Dictionary* (2004) ("core") (Plaintiff's Ex. 12, Dkt No 128-12).

Defendants respond that "implant abutment insert" refers to the insert piece of the abutment and that "core" refers to the piece of the abutment that fits over the insert—that is, the abutment comprises two pieces, the "implant abutment insert" and the "core." Dkt. No. 138 at 20–21. Defendants contend that the "instant invention" of the '606 Patent, throughout its prosecution history, is described as including an abutment comprising two pieces, an insert and a core. *Id.* at 21–23. Defendants further contend that a plain meaning of the claim language evinces that the "core" and "implant abutment insert" together form the abutment as it requires the core to "fit over" the insert. *Id.* at 22.

According to Defendants, the only mention of a one-piece abutment in the patent establishes that the patentee did not possess a method for making such, and therefore such an abutment is outside of the scope of the invention:

> The objects of the instant invention are accomplished through the use of a system that includes a two piece abutment similar to that described above (***until such time as the material and process allow one piece ceramic/zirconium abutments***).

Id. at 24 (quoting '606 Patent col.2 ll.41–44 (emphasis added by Defendants)). Further, Defendants argue, the embodiment of Figures 6a and 6b is the same "core" that fits over the insert as elsewhere described in the patent as it designated by the same item number, 40, in the description and figures. *Id.* (citing '606 Patent col.5 ll.55–56). And Defendants argue the "implant abutment insert" is never described as simply a reference but, rather, as the lower portion of the abutment. *Id.* (citing '606 Patent figs.2–5, col.5 ll.30–38).

With respect to the "core blank," Defendants respond that it is distinct from the "block" from which the coping is milled in Claim 5 and should be construed accordingly. *Id.* at 28–29. Thus, Defendants argue, the "core blank" of the claims should construed as the core blank is described and depicted—a cylinder with an axis depicted at various angles. *Id.*

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: **Intrinsic evidence**: '606 Patent figs.2–5, 6a, 6b, col.2 ll.41–45, col.2 l.54, col.2 ll.56–60, col.3 ll.19–21, col.3 ll.29–31, col.3 l.33, col.3 ll.39–42, col.3 ll.59–61, col.3 l.66, col.4 l.67 – col.5 l.6, col.5 l.13, col.5 l.16, col.5 l.25, col.5 ll.30–38, col.5 l.40, col.5 l.52 – col.6 l.15; U.S. Patent Application No. 60/543,038[8] (Defendants' Ex. H, Dkt. No. 138-9); U.S. Patent Application No. 60/566,855[9] (Defendants' Ex. I, Dkt. No. 138-10); '606 Patent File Wrapper September 17, 2008 Application (Defendants' Ex. J, Dkt. No. 138-11), September 24, 2010 Office Action (Defendants' Ex. K, Dkt. No. 138-12), January 4, 2011 Supplemental Amendment (Defendants' Ex. L, Dkt. No. 138-13).

Plaintiff replies that the abutments of Figures 6a and 6b are one-piece abutments. Dkt. No. 142 at 12 (citing '606 Patent File Wrapper September 17, 2008 Drawings at figs.6a, 6b, Dkt. No. 142-3 at 8). Plaintiff further replies that a related patent application recognizes that abutments may be one piece. "it would be beneficial to provide a system for simultaneously manufacturing a custom dental crown coping and ceramic infrastructure (abutment or ceramic portion of the abutment if two piece)." *Id.* (quoting U.S. Patent No. 61/099,566[10] ¶ [0005], Dkt.

[8] The '606 Patent claims priority to and incorporates U.S. Patent Application No. 60/543,038. '606 Patent, at [60] Related U.S. Application Data, col.1 ll.7–14.

[9] The '606 Patent claims priority to and incorporates U.S. Patent Application No. 60/566,855. '606 Patent, at [60] Related U.S. Application Data, col.1 ll.7–14.

[10] U.S. Patent Application No. 61/099,566 incorporates the application that issued as the '606 Patent and purports to be a continuation-in-part of the '606 Patent's application. U.S. Patent Application No. 61/099,566 ¶ [0001], Dkt. No. 142-1 at 3.

No. 142-1 at 5). Plaintiff further replies that the core need not fit over the insert used for the scan so long is it "fits over the shape from the stored data" for the insert. *Id.* And Plaintiff replies that the "core blank" is not a block and is not necessarily a cylinder. *Id.* at 13.

Plaintiff cites further **intrinsic evidence** to support its position: '606 Patent col.2 ll.57–60; '606 Patent File Wrapper September 17, 2008 Drawings (Plaintiff's Ex. 30 Dkt. No. 142-3); U.S. Patent Application No. 61/099,566 (Plaintiff's Ex. 28, Dkt. No. 142-1).

Analysis

There are three issues in dispute with respect to these terms. First, whether the abutment of the '606 Patent's invention is necessarily a two-piece abutment. Second, whether the "implant abutment insert" is the insert that is actually used with the implant. Third, whether the "core blank" is necessarily a cylindrical block. With respect to the first issue, the Court determines that the abutment of the patent's invention is not necessarily a two-piece abutment. With respect to the second issue, the Court determines that the "implant abutment insert" is an insert portion of an abutment (whether two-piece or one-piece), and not merely a reference. And with respect to the third issue, the Court determines that the "core blank" is not necessarily a cylindrical block.

The "implant abutment insert" and "core" are two portions of an implant abutment. The '606 Patent refers to abutments with two portions, an insert (metal) portion and a core (ceramic) portion. *See, e.g.*, '606 Patent, at [57] Abstract ("A metal portion (base) of an abutment is located in a model of a patient's mouth and the model is scanned. The data from the scan is then utilized to manufacture the ceramic portion of the abutment and the coping."), col.1 ll.42–46 (noting that in the prior art "[t]he ceramic portion of the abutment, which is cemented to the metal portion in the lab prior to constructing the crown coping, simulates a laboratory analog of a prepared tooth stump base for fabrication of a custom crown coping"), col.2 ll.45–48 ("The metal insert portion

of the abutment is a standard piece. The ceramic portion of the abutment becomes a custom-made piece, which is manufactured at the same time the coping is manufactured."). The patent provides an overview description of the manufacturing process, referring to the portions of the abutment and the role each portion has in the process:

> a lab technician will fit the metal portion of the abutment into the appropriate location in the model. The model will then be scanned. . . . The data from the scan, along with stored data about the standard shape of the metal insert to which the ceramic portion is to be mounted, is used to determine and design the appropriate shape for the ceramic portion of the abutment.

Id. at col.2 ll.51–60. In a more detailed description, the patent provides:

> Referring to FIG. 2 is a schematic of the method of manufacturing custom crown copings and infrastructures of the instant invention. As is shown in FIG. 2, the manufacturing method of the instant invention begins with the purchase of the metal portion of the abutment from a manufacturer. The abutment is located in a model of the patient's mouth and the metal portion of the abutment, which is located in the model, is scanned. The data from the scan is then utilized to manufacture the ceramic portion of the abutment and the coping.

Id. at col.4 l.65 – col.5 l.6. That is, the abutments that are customized according the invention have two portions, and insert portion and a core portion.

While the customized abutment of the invention may comprise two portions, these portions are not necessarily separate pieces—the abutment is not necessarily a two-piece abutment. The problem the invention sets forth to solve is stated as follows: "Therefore, it would be beneficial to provide a system for simultaneously manufacturing a custom dental crown coping and ceramic infrastructure (abutment ***or ceramic portion of the abutment if two piece***) to reduce the amount of labor, time and materials." *Id*. at col.2 ll.25–29 (emphasis added). That is, the problem to be addressed by the invention exists for abutments that may be—but are not necessarily—two pieces. In the context of this problem, the patent provides certain objectives of the invention:

> A principal object of the instant invention is to provide a system for simultaneously or mechanico-sequentially fabricating a custom dental crown coping and infrastructure (abutment) to reduce the amount of labor, time and materials. The process is accomplished by integrating, sharing and interpreting stored Cad/Cam digital job information and CNC machining programs to achieve optimized custom milling results.
>
> The objects of the instant invention are accomplished through the use of a system that includes a two piece abutment similar to that described above (***until such time as the material and process allow one piece ceramic/zirconium abutments***). The metal insert portion of the abutment is a standard piece. The ceramic portion of the abutment becomes a custom-made piece, which is manufactured at the same time the coping is manufactured.

'606 Patent col.2 ll.33–48 (emphasis added). This does not mean that the "instant invention" is limited to two-piece abutments, as Defendants contend. Rather, it means that the invention is agnostic on the issue of whether the abutment is one-piece or two-piece. That is, the invention—a manufacturing process—will work with a two-piece abutment and with a one-piece abutment, when the one-piece abutment becomes available.

As stated above, the "implant abutment insert" is a portion of an abutment. But the patent provides that this "insert portion of the abutment is a standard piece" with a "standard shape." *Id.* at col.2 l.45–59; s*ee also*, *id.* at col.3 ll.17–24 ("a custom crown core and custom crown coping is made for use with an ***off-the-shelf*** lower abutment portion" (emphasis added)). That is, the insert is not a unique or custom part—it is standardized. All inserts of a particular type are the same—they have a standard "size and shape." *See, e.g.*, *id.* at col.3 ll.22–24 ("[i]nformation regarding the size and shape of the off-the-shelf pieces are stored in a data file or library"). So, while the patent is clear that the "implant abutment insert" is a physical portion of an implant abutment, the Court discerns no reason that the insert fitted into the model of a patient's mouth must be the same physical piece that is ultimately placed in the patient's mouth.

Finally, a "core blank" is not simply a form or a cylindrical block, it is material that has been pre-formed partially in the shape of a core. The '606 Patent does not provide much in the

way of a description of a "core blank" other than it is something from which a core can be milled. '606 Patent col.5 l.52 – col.6 l.15. The exemplary blanks come loaded in a frame at different angles, with each angle corresponding to a different implant angle. *Id*. And the blanks come in different sizes, each size also corresponding to a different implant angle. *Id*. This does not distinguish a blank from a block, but rather defines how the blanks are fed to the milling machine for manufacture. The prosecution history provides more guidance. Specifically, Figure 6a as originally filed denotes the blanks with "Implant Connection & Emergence pre-milled." '606 Patent File Wrapper September 17, 2008 Drawings, fig.6a, Dkt. No. 142-3 at 8. From this, the Court understands that the critical characteristic of the blank it that it has part of the core shape pre-formed, it is pre-formed toward the shape of the core.

Accordingly, the Court construes "implant abutment insert," "core," and "core blank" as follows:

- "implant abutment insert" means "lower insert portion of an abutment";
- "core" means "upper portion of an abutment"; and
- "core blank material" means "material partially formed toward the shape of the core."

B-3. "at the same time"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"at the same time" • '606 Patent Claim 1	"referencing data sets for the core and coping concurrently or so close in time as to appear concurrent"	"simultaneously and from that same data" **Alternative Construction:** • indefinite

The Parties' Positions

Plaintiff submits the '606 Patent describes that the core and coping are designed "at the same time" in that they are designed in conjunction. Dkt. No. 128 at 25 (citing '606 Patent col.2 ll.56–62, col.5 ll.15–21). This, according to Plaintiff, was explained by the patentee in prosecution—the core and coping were designed in concert rather than designing the coping only after the core was designed and manufactured, as was previously done in the art. *Id.* at 25–26. Plaintiff contends that this meaning of "at the same time" comports with independent Claims 10 and 11, one of which requires the coping to be designed after the core, the other requires that the core design be based on the coping design, even while the claim from which they depend requires that design of the core happen at the same time as design of the coping. *Id.* at 26.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '606 Patent col.2 ll.25–29, col.2 ll.33–40, col.2 ll.56–62, col.3 ll.46–50, col.5 ll.15–21; '606 Patent File Wrapper November 16, 2010 Amendment (excerpts) (Plaintiff's Ex. 11, Dkt. No. 128-11). **Extrinsic evidence**: *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("concurrent") (Plaintiff's Ex. 27, Dkt. No. 128-27); *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("simultaneous") (Plaintiff's Ex. 23, Dkt. No. 128-23).

Defendants respond that construing "at the same time" to encompass "so close in time as to appear concurrent" would result in an uninformed term of degree and therefore render the claims indefinite. Dkt. No. 128 at 25–27. Defendants further argue that dependent Claims 10 and 11 should not be used to change the meaning of "at the same time" and that those claims are invalid because they fall outside of the scope of the claim from which they depend. *Id.* at 26 & n.7. Specifically, Defendants contend that the core and coping can't be designed "at the same

time," as required by Claim 1, and also be designed in sequence, as required by Claims 10 and 11. *Id.* at 26.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '606 Patent File Wrapper November 16, 2010 Amendment (excerpts) (Plaintiff's Ex. 11, Dkt. No. 128-11). **Extrinsic evidence**: *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("concurrent") (Plaintiff's Ex. 27, Dkt. No. 128-27); *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("simultaneous") (Plaintiff's Ex. 23, Dkt. No. 128-23).

Plaintiff replies that the claim language is "at the same time," not "simultaneously." Dkt. No. 142 at 12–13. Plaintiff further replies that whether the components are designed close enough in time so as to be designed "at the same time" is satisfied by an objective measure, i.e., whether they appear to be concurrent. *Id.*

Analysis

The issue in dispute distills to whether "at the same time" means "simultaneously." It does not.

In the context of the '606 Patent, design of the core and coping happens "at the same time" when they are designed in conjunction—without an intervening manufacture of the core. For instance, the patent describes the prior-art approach as first using model-scan data to design and manufacture the core and then designing the coping based on scan data for the manufactured core. *See*, *e.g.*, '606 Patent fig.1, col.4 ll.49–64. The approach of the invention is different in that the design of the coping is based not on the manufactured core, but rather on the model-scan data or the design of the core. *Id*. at fig.2, col.4 l.65 – col.5 l.21. Alternatively, the core design can be based on the coping design. *Id*. at col.6 ll.19–34. That is, the design of the coping and the design

of the core occur contemporaneously, with the design of one informing the design of the other or both being designed from the same data.

The Court's understanding comports with the use of "at the same time" in Claims 10 and 11. Claim 10 recites "designing the coping to fit over the core once the core is designed." This is the scenario in which the coping is designed using the core design or using same data as used for the core design. Claim 11 recites "subtracting a thickness of the coping from the coping shape to form a shape and orientation of the core." This is the scenario in which the coping design informs the core design. And the coping and cores of these claims are designed at the same time in that they are designed without an intervening manufacturing step—they are designed contemporaneously.

Accordingly, the Court construes "at the same time" as follows:

- "at the same time" means "contemporaneously and in conjunction."

B-4. "coping"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"coping" • '606 Patent Claims 1, 12	"a structure disposed over an abutment which may be the final shape of the tooth replacement or may itself be an intermediate structure to the final shape"	"substructure layer supporting a crown and covering an abutment"

The Parties' Positions

Plaintiff submits the '606 Patent teaches that the coping may be the final shape of the tooth replacement, and therefore need not support a crown. Dkt. No. 128 at 27 (citing '606 Patent col.2 ll.7–10).

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '606 Patent fig.5, col.2 ll.7–10, col.3 ll.53–

58; U.S. Patent Application No. 60/543,038[11] (Plaintiff's Ex. 13, Dkt. No. 128-13). **Extrinsic evidence**: *Mosby's Dental Dictionary* (2004) ("coping") (Plaintiff's Ex. 8, Dkt No 128-8).

Defendants respond that the "coping" of the '606 Patent necessarily supports a crown because it is understood that way in the art, it is described that way in the exemplary embodiments, and it is described that way in the claims. Dkt. No. 138 at 27–28. Specifically, Defendants contend that Claims 11 and 12 both require that the coping shape depends on, and is not coextensive with, the crown shape. *Id.* at 27. This, Defendants argue, evinces that a coping is not a crown. *Id.* Defendants contend that the description of building up the coping to resemble the tooth further evinces that a coping is not a crown. *Id.* at 27–28. That is, the patent's description that "the coping is completed, and built-up with porcelain to resemble a natural tooth" indicates that the coping is an intermediate structure on which a veneer crown is built. *Id.*

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '606 Patent, at [57] Abstract, figs.4, 5, col.3 ll.55–56, col.5 ll.38–51, col.6 ll.31–32. **Extrinsic evidence**: *Mosby's Dental Dictionary* (2004) ("coping") (Plaintiff's Ex. 8, Dkt No 128-8).

Plaintiff replies that a coping can function as a crown, as recognized in a '606 Patent priority application: "In the context of the Lava TM System, a Computer Numeric Control (CNC) Machine is utilized to manufacture the coping by milling a block to the shape of the crown." Dkt. No. 142 at 13 (quoting U.S. Patent Application No. 60/543,038 at 1, Dkt. No. 128-13 at 3).

[11] The '606 Patent claims priority to and incorporates U.S. Patent Application No. 60/543,038. '606 Patent, at [60] Related U.S. Application Data, col.1 ll.7–14.

Analysis

The parties dispute whether the "coping" of the '606 Patent necessarily supports a crown. In the context of the '606 Patent, the "coping" of the claims is a "crown coping" and therefore is meant to support a crown.

The "coping" of the claims of the '606 Patent is a "crown coping." For example, Claim 1 and Claim 12 each recite "a method of manufacturing custom crown copings." The abstract provides the that patent is directed to a "method of manufacturing custom crown coping." '606 Patent, at [57] Abstract. And the summary of the invention provides that a "principal object of the instant invention is to provide a system for . . . fabricating a custom dental crown coping." *Id*. at col.2 ll.33–35; *see also*, *id*. at col.6 ll.27–29 (referring to the "custom dental crown coping . . . of the instant invention"). The Court understands from these repeated references to the "crown coping" that the "coping" of the claims is a "crown coping."

As set forth above, the Court understands a "coping" to be a covering or a cap. With that understanding, a crown coping is a covering or cap to support a crown. The description of a coping that Plaintiff contends is a description of coping without a crown is not. In relevant part, the patent provides that "[o]nce the coping is completed, and built-up with porcelain to resemble a natural tooth, the entire piece (coping and abutment) is ready for placement in the patient's mouth. The crown coping/crown is cemented conventionally (like any crown to a tooth) to the installed abutment." '606 Patent col.2 ll.7–12. The Court understands the porcelain build up on the coping is the crown, not the coping. With this veneer, the coping is the "crown coping/crown"—it is the combination of coping and crown.

Accordingly, the Court construes "coping" as follows:

- "coping" means "covering or cap to support a crown."

C. U.S. Patent No. 8,751,031

C-1. "single master electronic file"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"single master electronic file" • '031 Patent Claim 1	"a single collection of data pertaining to a main or critical subject matter for use by a computer program" **Alternative Construction:** • "a single collection of data pertaining to manufacturing components for a dental restoration for use by a computer program"	"exactly one computer file containing all scan and design data for a restoration for use by a computer program"

The Parties' Positions

Plaintiff submits that a "file" is a collection of related data, and need not be "exactly one electronic file."[12] Dkt. No. 128 at 29. This, according to Plaintiff, is evinced by the ordinary meaning of "file"—"a collection of related data records (as for a computer)"—and by the '031 Patent's depiction of an exemplary master file in Figure 9 as containing multiple data sets. *Id.* (citing *Merriam Webster's Collegiate Dictionary* 467 (11th ed. 2003), Dkt. No. 128-14 at 2; '606 Patent fig.9). Plaintiff submits that the term "single" was inserted into the claim in order to distinguish a prior-art approach that used multiple digital models to produce a single component. *Id.* at 29–30. Plaintiff further submits that the master file need not include "all scan and design data" because the patent discloses that the file may be created by means other than a scan. *Id.* at 30 (citing '031 Patent col.4 ll.64–66).

[12] Defendants originally proposed that "single master electronic file" be construed as "exactly one electronic file containing all scan and design data for a single restoration for use by a computer program." Exhibit A to Joint Claim Construction and Prehearing Statement 6, Dkt. No. 111-1 at 6.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '031 Patent fig.9, col.3 ll.38–42, col.4 ll.64–66, col.5 ll.1–6; '031 Patent File Wrapper December 3, 2013 Amendment – RCE (Plaintiff's Ex. 16, Dkt. No. 128-16). **Extrinsic evidence**: *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("file") (Plaintiff's Ex. 14, Dkt. No. 128-14); *Microsoft Computer Dictionary* (5th ed. 2002) ("file") (Plaintiff's Ex. 15, Dkt. No. 128-15).

Defendants respond that the '606 Patent's prosecution history establishes that the "single master electronic file" is exactly one file. Dkt. No. 138 at 30–31. Specifically, Defendants argue, the word "single" was added to the claims in prosecution in order to distinguish the "single master electronic file" from the "multiple digital models" of a prior-art reference. *Id.* at 30–31. Defendants further respond that the patent describes the contents of the master file: "the master file includes scan data regarding the operative arch and preparation area, as well as the software generated (virtual) final external shape of the restoration(s) to fit over the preparation area(s)." *Id.* at 32 (quoting '031 Patent col.8 ll.48–53 (Defendant's modifications omitted)). And, Defendants argue, the "other data" the Plaintiff argues may be in the master file is also described in the patent as "scan data": "a 3D scan, or other digital, electronic or virtual input of information relating to the real condition of the a patient's mouth ***(i.e. scanning a patient's mouth, impression taken from the mouth, or a model constructed from an impression taken from the mouth***)." *Id.* at 32 (quoting '031 Patent col.4 l.64 – col.5 l.1 (emphasis added by Defendants)).

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '031 Patent col.3 ll.38–42, col.4 ll.64–66, col.8 ll.48–53; '031 Patent File Wrapper June 29, 2012 Amendment (Defendants' Ex. M, Dkt. No. 138-14), October 18, 2012

Office Action (Defendants' Ex. N, Dkt. No. 138-15), December 3, 2013 Amendment – RCE (Plaintiff's Ex. 16, Dkt. No. 128-16).

Plaintiff replies that "single master electronic" file should be construed to give effect to "master." Dkt. No. 142 at 14. This, according to Plaintiff, means that the master file "controls the operation of" separate data collections. *Id.* Plaintiff further replies that the '031 Patent describes that the master file includes scan data, it does not require the master file to include "all" scan data. *Id.*

Plaintiff cites further intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '031 Patent fig.11, col.8 l.48. **Extrinsic evidence**: *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("master") (Plaintiff's Ex. 29, Dkt. No. 142-2).

Analysis

There are two issues in dispute: First, whether the "single master electronic file" is exactly one file. Second, whether this file contains "all" the scan and design data for a restoration. With respect to the first issue, the Court determines that the "single master electronic file" is one electronic file. With respect to the second issue, the Court determines that the while this master file directs manufacturing efforts, what it includes is set forth in the claims: "a virtual model including a final external shape of a virtual ideal tooth replacement of a restoration for a patient."

The master file is the file used to manufacture components. For example, the '031 Patent explains that the "master file . . . may be utilized to design any component . . . of the dental restoration." '031 Patent fig.9, col.8 ll.34–39. The patent further explains that "the master file may be utilized to make any of the components . . . of the restoration." *Id.* at col.8 ll.48–64. But the patent also explains that "completed design ***files*** are saved for manufacture . . . the data in the

stored digital/electronic ***files*** are accessed and utilized . . . to aid in the design and/or manufacture of 'companion' or 'collateral' components." *Id*. at col.18 ll.51–56 (emphasis added); *see also, id*. at col.6 ll.3–7 ("Information regarding the size and shape of the off-the-shelf pieces are stored in a data file or library accessed by a milling machine (such as a DCS milling machine) or otherwise accessed as part of the CAD process (i.e. by the central control system)."), col.11 ll.19–21 (referring to the "library of shapes and sizes that will be utilized in designing components through the instant invention"), col.13 ll.17–20 ("The custom ceramic portion of the abutment 40 will be designed to have predetermined minimum dimensions 42 (stored in library)."). The Court understands this to mean that while the data may exist in multiple computer files (e.g., in a library), the single master file coordinates or directs any design or manufacture based on the data. *See id*. at col.7 ll.66–67 ("The inventive system provides an automated CAD/CAM dental manufacturing system that creates a virtual replacement tooth file that ***directs*** subsequent deconstructive component design." (emphasis added)).

The prosecution history does not dictate Defendants' proposed "exactly one computer file containing all scan and design data." In distinguishing a prior-art reference ("Schmitt"), the patentee argued that

> Schmitt fails to disclose a **single** master file that is **utilized to manufacture two or more components of a single artificial tooth of a dental restoration** in the manner currently claimed by the Applicant. To the contrary, Schmitt utilizes multiple digital models **to produce a single component** (the "substructure"). Moreover, the component of Schmitt is **not** an artificial tooth, it does not replace the tooth structure at all. Instead, the component of Schmitt is a substructure to support an artificial tooth/teeth that is manufactured separately from the substructure.

'031 File Wrapper December 3, 2013 Amendment – RCE at 8, Dkt. No. 128-16 at 9 (emphasis in original). Thus, the patentee distinguished its claimed invention from the prior art in that the prior art "utilizes multiple digital models to produce a single component" that is not an artificial

tooth, but rather is the structure to support to support an artificial tooth (or teeth). The patentee characterized the prior-art reference in three relevant ways, it: (1) "utilizes multiple digital models," (2) "to produce a single component," (3) that is "not an artificial tooth." *See also,* '031 File Wrapper December 3, 2013 Amendment – RCE at 8 (amended claim), Dkt. No. 128–16 at 6. It is unclear how these characterizations pertain to how data is stored. Indeed, how the prior-art's model data is stored is not mentioned in the patentee's remarks. Thus, it is not clear that "a single master electronic file including a virtual model" is distinct from "multiple digital models" in the way the Defendants contend. Simply, the prosecution history cited by Defendants does not give rise to a disclaimer of any way of storing manufacturing data other than "exactly one computer file containing all scan and design data." *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1325 (Fed. Cir. 2013) ("in order for prosecution disclaimer to attach, the disavowal must be both clear and unmistakable").

Finally, the extrinsic evidence establishes that, as relevant here, an electronic file is a collection of related records treated as a unit by a computer application. *See, e.g.*, *Merriam Webster's Collegiate Dictionary* 467 (11th ed. 2003) (defining "file," in relevant part, as "a collection of related data records (as for a computer)" and "a complete collection of data (as text or a program) treated by a computer as a unit esp. for purposes of input and output"), Dkt. No. 128-14 at 2; *Microsoft Computer Dictionary* 211 (5th ed. 2002) (defining "file," in relevant part, as "[a] complete, named collection of information, such as a program, as set of data used by a program, or a user-created document"), Dkt. No. 128-15 at 2.

Accordingly, the Court construes "single master electronic file" as follows:

- "single master electronic file" means "single complete collection of data treated by a computer as a unit that directs component manufacture."

C-2. "virtual ideal tooth replacement of a restoration"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"virtual ideal tooth replacement of a restoration" • '031 Patent Claim 1	"a mathematical or graphical representation of a conception of a tooth, for a crown, bridge, partial denture, or complete denture, that restores or replaces lost tooth structure"	indefinite

The Parties' Positions

Plaintiff submits that "ideal" is used here to denote that the tooth replacement is conceptual, not actual. Dkt. No. 128 at 31–32. Specifically, Plaintiff contends, "ideal" is not used to denote that the tooth replacement is "perfect" but rather that it is the product of design process that is based on approximations and preferences. *Id.*

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '031 Patent col.8 l.50, col.15 ll.17–20, col.16 ll.11–14, col.16 ll.24–34, col.16 ll.63–64, col.18 ll.25–29. **Extrinsic evidence**: *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("ideal") (Plaintiff's Ex. 17, Dkt. No. 128-17); *Mosby's Dental Dictionary* (2004) ("restoration") (Plaintiff's Ex. 18, Dkt No 128-18).

Defendants respond that whether a tooth replacement is "ideal" is subjective and the '031 Patent does not provide guidance as to what constitutes "ideal." Dkt. No. 138 at 33. Thus, Defendants conclude, the term renders the claims indefinite. *Id.* And, according to Defendants, redefining "ideal" as "acceptable" does not cure the indefiniteness problem as "acceptable" is also subjective. *Id.* Defendants further respond that interpreting "ideal" to mean any conception of a tooth would make "ideal" mere surplusage in the phrase "virtual ideal tooth replacement." *Id.* Defendants also argue the Plaintiff's proposed construction improperly broadens the

"restoration" of the patent to include dentures and needlessly rewrites "virtual" as "mathematical or graphical representation." *Id.* at 33–34.

In addition to the claims themselves, Defendants cite the following intrinsic and extrinsic evidence to support their position: **Intrinsic evidence**: '031 Patent col.18 ll.25–29. **Extrinsic evidence**: Giordano Decl.[13] ¶¶ 22, 25, 29–30 (Dkt. No. 138-1 at 6–8).

Plaintiff replies that the "ideal" tooth replacement is one that the restoration designer conceives as appropriate for the specific patient based on that patient's data. Dkt. No. 142 at 14–15. And, Plaintiff contends, "an 'ideal' conception of a tooth replacement for one [designer] may differ from another [designer's] conception for that tooth replacement." *Id.* at 15.

Plaintiff cites further **intrinsic evidence** to support its position: '031 Patent col.5 ll.30–38.

Analysis

There are two issues in dispute: First, whether "ideal" in the claims is an uninformed subjective measure that renders the claims indefinite. Second, whether "restoration" should be broadly construed to include dentures. With respect to the first issue, the Court determines that "ideal" here is used to denote that the tooth replacement is conceptual, and not physical. With respect to the second issue, the Court finds that under its plain and ordinary meaning, a "restoration" includes dentures and the '031 Patent uses the term according to its plain and ordinary meaning.

The patent contemplates using the invention to "***visualize*** the final external shape of the restoration" regardless of the restoration. '031 Patent col.15 l.66 – col.16 l.4 (emphasis added).

[13] Declaration of Dr. Russel A. Giordano II.

For example, the patent describes using an exemplary embodiment to visualize the final shape for a restoration, "whether a single tooth is being replaced, multiple teeth, a bridge, etc.":

> In a preferred embodiment of the software, the models are die-cut and ditched prior to scanning (as is shown in FIG. 7) to identify all individual restorations to be designed and manufactured for the operative arch. Nevertheless, in one preferred embodiment, although die-cut and ditched prior to scanning, all the pieces are scanned in a single process and are individually identified by the software. Identification of the operative arch, the prepared teeth and the opposing arch are obtained by the software as design input. ***Depending upon the restoration being designed (i.e. whether a single tooth is being replaced, multiple teeth, a bridge, etc.), the software may utilize one or more tooth libraries that are selected automatically by the software or manually by the operator to be used to visualize the final external shape of the restoration.***

'031 Patent col.15 l.58 – col.16 l.4 (emphasis added). The visualization aid extends to operator interaction with the modeled restoration to change the restoration to more closely align with what the operator conceives. *See, e.g.*, *id*. at col.16 l.59 – col.17 l.2 ("Should fully parametric modeling of the coping fail to produce an acceptable result the software will provide tools for manual editing of the coping shape."). That is, the operator conceives of the restoration he wants and uses the system to create the model of that conception—to create a virtual representation (model) of the conceived restoration (ideal).

The Court's understanding of "ideal" comports with the extrinsic evidence, which allows that "ideal" refers to "mental images, ideas, or conceptions." *Merriam Webster's Collegiate Dictionary* 616 (11th ed. 2003), Dkt. No. 128-17 at 2. And it more naturally aligns with the description of the invention than Defendants' proposed definition of "ideal" as "perfect." *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) ("'The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction.'" (quoting *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)). On this issue, the Court finds that Defendants' expert is not credible: he states but ignores the extrinsic evidence that "ideal" refers

to "mental images, ideas, or conceptions"—which definition comports with the disclosure of the '031 Patent—and focuses on an extrinsic definition of "ideal" as "a standard of perfection, beauty, or excellence"—which finds no support in the patent. Specifically, while the patent states the invention is to help visualize the restoration (i.e. form mental images of—conceptualize—the restoration), there is no relevant mention of even the concepts of "perfection, beauty, or excellence" in the patent.

Given the patent's open-ended list of applicable restorations, "a single tooth . . ., multiple teeth, a bridge, etc.," the patent has not narrowed "restorations" to specific restorations. The term takes on its plain and ordinary meaning, which includes dentures. *Mosby's Dental Dictionary* 549 (2004) ("restoration"), Dkt. No. 128-18 at 2.

Accordingly, the Court determines that Defendants have failed to prove that any claim is rendered indefinite by the term "ideal" and construes "virtual ideal tooth replacement of a restoration" as follows:

- "virtual ideal tooth replacement of a restoration" means "virtual representation of a conceived tooth replacement of a restoration."

C-3. "utilizing said master file to manufacture"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"utilizing said master file to manufacture" • '031 Patent Claim 1	Plain and ordinary meaning of "utilizing" and "manufacture." **Alternative Construction:** • "making use of said master file to make the components"	"creating one or more output files readable by a CAM machine from said single master electronic file to manufacture"

The Parties' Positions

Plaintiff submits that other than "said master file," which is the subject of a separate dispute, "utilizing said master file to manufacture" consists of terms the meanings of which are clear without construction, namely "utilizing" and "manufacture." Dkt. No. 128 at 32. Plaintiff further submits that the '031 Patent allows manufacture using the master file without creating one or more output files readable by a CAM machine as it teaches that "a single software application may control both the CAD and CAM processes" and that "any CAM machine or other manufacturing process . . . may be utilized." *Id.* at 32–33 (quoting '031 Patent col.9 ll.7–10, col.9 ll.39–47).

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '031 Patent col.9 ll.7–10, col.9 ll.39–47. **Extrinsic evidence**: *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("utilize") (Plaintiff's Ex. 19, Dkt. No. 128-19); *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("manufacture") (Plaintiff's Ex. 20, Dkt. No. 128-20).

Defendants respond that the only way the '031 Patent describes using the master file to manufacture is by creating CAM files and the claims should be limited to that embodiment. Dkt. No. 138 at 34 (citing '031 Patent col.8 l.65 – col.9 l.1). Further, Defendants contend, the patent describes the use of CAM as a feature of the "instant invention." *Id.* at 34–35 (citing '031 Patent col.5 ll.3–5).

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: '031 Patent col.5 ll.3–5, col.8 l.65 – col.9 l.1, col.9 ll.46–47.

Plaintiff replies the ’031 Patent provides that “any CAM machine or other manufacturing process . . . may be utilized” and therefore the patent is not limited to CAM machines. Dkt. No. 142 at 15 (quoting ’031 Patent col.9 ll.39–47).

Plaintiff cites further **intrinsic evidence** to support its position: ’031 Patent col.4 ll.15–21.

Analysis

The issue here is whether “utilizing said master file to manufacture” necessarily entails producing one or more files for a CAM machine. It does not.

The ’031 Patent specifically lists examples of manufactures that do not use CAM machines:

> The manufacturing facility shown in FIG. 10 includes CAM machines capable of manufacturing abutments, temporary crowns, Cores (copings/infrastructures), crown molds (in the embodiment shown, male and female portions of a two-piece mold), and ultimately crowns. In the embodiment shown, the crowns must be pressed using the two-piece crown mold. Thus, it will be necessary to manufacture the crown molds prior to pressing the crown veneer. All other components may be manufactured in any order or simultaneously. In a preferred embodiment, the CAM machines of FIG.10 utilize a continuous production system as is described in U.S. application Ser. No. 11/023,950. ***Nevertheless, it will be appreciated that any CAM machine or other manufacturing process now known or hereinafter developed may be utilized without departing from the spirit and scope of the instant invention. For example, pieces may be injection molded, milled, built-up, sintered, welded, etc.***

’031 Patent col.9 ll.26–47 (emphasis added). That is, the patent expressly contemplates injection molding, milling, building up, sintering, and welding as alternatives to using a CAM machine. Such a disclosure is inconsistent with limiting to the claims to a CAM machine based on statements regarding the “instant invention.” *See Absolute Software, Inc. v. Stealth Signal, Inc.*, 659 F.3d 1121, 1136 (Fed. Cir. 2011) (“we have found that use of the phrase ‘present invention’ or ‘this invention’ is not always [] limiting, such as where the references to a certain limitation as

being the 'invention' are not uniform, or where other portions of the intrinsic evidence do not support applying the limitation to the entire patent").

Accordingly, the Court rejects Defendants' proposed "creating one or more output files readable by a CAM machine from said single master electronic file" limitation and determines that "utilizing said master file to manufacture" has its plain and ordinary meaning without the need for further construction.

C-4. "coordinated, sequential, simultaneous or partly simultaneous and partly sequential, manner"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"coordinated, sequential, simultaneous or partly simultaneous and partly sequential, manner" • '031 Patent Claim 1	plain and ordinary meaning **Alternative Construction:** • "one or more of four processes for manufacturing, namely: 1) a coordinated manner; or 2) a sequential manner; or 3) a simultaneous manner; or 4) a partly simultaneous and partly sequential manner; wherein the terms 'coordinated,' 'sequential,' 'simultaneous,' 'partly simultaneous' and 'partly sequential' each have a plain and ordinary meaning"	indefinite

The Parties' Positions

Plaintiff submits this term is already clear and would not benefit from construction. Dkt. No. 128 at 33. Plaintiff further submits that the term defines a manner of manufacture that is distinct from the prior-art approach in which one component (implant abutment) was manufactured, modified, and scanned before a second component (coping) could be manufactured. *Id.* at 33–34 (citing '031 Patent col.3 ll.26–31).

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence**: '031 Patent figs.10, 10a, col.3 ll.26–31, col.4 ll.15–21, col.7 ll.61–64, col.8 ll.48–55, col.9 ll.23–25, col.9 ll.28–35; U.S. Patent No. 7,445,449[14] col.3 ll.18–26. **Extrinsic evidence**: *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("coordinate") (Plaintiff's Ex. 21, Dkt. No. 128-21); *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("sequential") (Plaintiff's Ex. 22, Dkt. No. 128-22); *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("simultaneous") (Plaintiff's Ex. 23, Dkt. No. 128-23); *Merriam Webster's Collegiate Dictionary* (11th ed. 2003) ("partly") (Plaintiff's Ex. 24, Dkt. No. 128-24).

Defendants respond that there are two possible interpretations of this phrase, and that there is no way to select between them—so the phrase renders claims indefinite . Dkt. No. 138 at 35. Specifically, Defendants contend that the phrase could mean: (1) "a coordinated, sequential, simultaneous manner [or] a partly simultaneous and partly sequential, manner" or, as Plaintiff proposes, (2) "a coordinated manner; [] a sequential manner; [] a simultaneous manner; or [] a partly simultaneous and partly sequential manner." *Id.* at 35–36 (modifications by the Court).

Plaintiff replies that there is only one reasonable interpretation of this phrase as it makes no sense for the manufacture to be both sequential and simultaneous. Dkt. No. 142 at 10.

Analysis

The only issue in dispute is whether the term has more than one reasonable interpretation. It does not.

The Court agrees with Plaintiff that an interpretation of this term that requires the manner of manufacture to be both "sequential" and "simultaneous" is unreasonable.

[14] The '031 Patent claims priority to and incorporates the application that issued as U.S. Patent No. 7,445,449. '031 Patent, at [63] Related U.S. Application Data, col.1 ll.8–21.

Accordingly, the Court construes "in a coordinated, sequential, simultaneous or partly simultaneous and partly sequential, manner" as follows:

- "in a coordinated, sequential, simultaneous or partly simultaneous and partly sequential, manner" means "in a coordinated manner, in a sequential manner, in a simultaneous manner, or in a partly simultaneous and partly sequential manner."

C-5. "end-stage materials"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"end-stage materials" • '031 Patent Claim 1	"materials that do not require material-altering post-production processes or transformation"	"materials that do not require material-altering post-production processes or transformation, such as factory sintered and HIP'd blocks or rods of zirconia or medical grade pure titanium"

The Parties' Positions

Plaintiff submits the '031 Patent teaches that "'end stage' materials" are materials "requiring no post production material processing or transformation." Dkt. No. 128 at 35 (quoting '031 Patent col.5 ll.47–49). Plaintiff argues that Defendants' proposed exemplary list of such materials threatens to improperly limit the claims and contradicts the patent's express teaching that the material may be "any other suitable end stage material now known or later discovered." *Id.* (quoting '031 Patent col.5 ll.51–52).

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: '031 Patent col.4 ll.49–50, col.5 ll.47–52.

Defendants respond that the parties agree on the construction except for the list of examples in Defendants' proposed construction and that the Plaintiff does not disagree that the

items of the list are in fact end-stage materials. Dkt. No. 138 at 36. Defendants contend that the list of examples will assist the jury. *Id.*

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: ’031 Patent col.1 ll.45–47, col.2 ll.60–63, col.4 ll.48–50, col.5 ll.47–52, col.5 ll.61–62.

Plaintiff replies that the examples will not help the jury. Dkt. No. 142 at 16.

Analysis

The parties dispute whether an exemplary list of “end-stage materials” in the construction of “end-stage materials” is helpful to a jury. The Court determines that such a list will likely not be helpful to a jury and declines to include such in the construction.

The ’031 Patent defines “end-stage materials”:

> As discussed with respect to the prior art, cutting the ceramic pieces in the green stage is much easier to accomplish than cutting once the pieces have been sintered. Nevertheless, the sintering process itself is an additional time consuming step that is required when working with green stage pieces and the shrinkage of organic shapes such as dental restorations occurs in a nonlinear manner that is difficult, if not impossible, to quantify in any accurate and reliable equations. Therefore, in the instant invention the pieces are milled from ***“end stage” materials (requiring no post production material processing or transformation) such as factory sintered and HIP'd blocks or rods of zirconium or medical grade pure titanium or any other suitable end stage material now known or later discovered)***. Cutting of the factory sintered block is slower than cutting from a green stage blocks; however the additional sintering step is eliminated. The use of a factory sintered and HIP'd blocks provides additional advantages over the use of a greenware block, such as allowing larger pieces to be milled from a single block or rod (i.e. full arches versus single crowns or bridges). In one preferred embodiment, as is discussed above, any and all crown and bridge Cores, and/or companion and collateral components are made only from ***“end-stage” materials that do not require material-altering post-production processes, such as factory sintered HIP'd (Heat and Isostatic Pressure)***.

’031 Patent col.5 ll.39–63 (emphasis added). That is, “end-stage materials” are defined as “materials that do not require material-altering post-production processes or transformation.”

The parties agree. This lexicography governs. The parties disagree whether to include examples from the description in the construction.

The Court declines to include examples from the description in the construction. Importantly, Defendants' proposed construction omits "any other suitable end stage material now known or later discovered." Including this example in the list essentially converts the list to "any suitable material," which adds nothing to the construction. Excluding it from the list threatens to improperly limit the term beyond the express definition. On whole, the Court finds that Defendants' truncated list of examples is improper and the full list of examples is unhelpful.

Accordingly, the Court construes "end-stage materials" as follows:

- "end-stage materials" means "materials that do not require material-altering post-production processes or transformation."

C-6. "collateral component"

Disputed Term	Plaintiff's Proposed Construction	Defendants' Proposed Construction
"collateral component" • '031 Patent Claim 2	plain and ordinary meaning **Alternative Construction:** • "peripheral piece"	"peripheral piece, such as a mold, that is used to make a final piece that mates together with other components of a restoration"

The Parties' Positions

Plaintiff submits that the '031 Patent expressly defines "collateral components" as "peripheral pieces." Dkt. No. 128 at 36 (citing '031 Patent col.4 ll.39–50, col.18 ll.51–63). Plaintiff objects to Defendants' proposed "such as a mold" language, arguing that it threatens to improperly limit the claims and it excludes other exemplary collateral components listed in the patent, such as "provisional acrylic splints/temporaries." *Id.* (quoting 031 Patent col.18 ll.51–62).

In addition to the claims themselves, Plaintiff cites the following **intrinsic evidence** to support its position: ’031 Patent col.4 ll.39–50, col.18 ll.51–63.

Defendants respond that while the ’031 Patent’s definition of a “collateral component” includes “peripheral piece” the definition further requires that the component is “used to make a final piece that mates together with other components of a restoration.” Dkt. No. 138 at 36–37 (quoting ’031 Patent col.4 ll.43–45). And, Defendants contend, the exemplary language “such as a mold” is part of the patent’s definition of collateral component, but is not essential to the construction so long as the construction expresses that the component is “used to make a final piece that mates together with other components of a restoration.” *Id.* at 37.

In addition to the claims themselves, Defendants cite the following **intrinsic evidence** to support their position: ’031 Patent col.4 ll.43–45, col.18 ll.63–67.

Plaintiff replies that the example will not help the jury and that the “collateral component” is not limited to one “that is used to make a final piece that mates together with other components of a restoration” as the ’031 Patent describes that a collateral component may mate with components other than a restoration. Dkt. No. 142 at 16 (citing ’031 Patent col.18 ll.51–63).

Analysis

The parties dispute whether a collateral piece is necessarily “used to make a final piece that mates together with other components of a restoration.” It is.

The ’031 Patent defines “collateral component”:

> In all software embodiments discussed above, completed design files are saved for manufacture. In a preferred embodiment, the data in the stored digital/electronic files are accessed and utilized by the software application to aid in the design and/or manufacture of “companion” or “collateral” components, such as implant abutments (made from file data regarding the inside of the crown Core), provisional acrylic splints/temporaries (made from data regarding the

> whole final restoration/tooth shape), Core overlays (made from data regarding the exterior of the crown Core), super-molds to form first stage ceramics on Cores, simultaneous abutments to fit under Cores, other digital/graphic driven services, etc. ***As used herein***, companion components refer to components that mate together with each other, while ***collateral components refer to peripheral pieces, such as molds, that are used to make a final piece that mates together with other components of a restoration***.

'031 Patent col.18 ll.51–67. This lexicography governs.

Accordingly, the Court construes "collateral component" as follows:

- "collateral component" means "peripheral piece, such as a mold, that is used to make a final piece that mates together with other components of a restoration."

V. CONCLUSION

The Court adopts the constructions above for the disputed and agreed terms of the Asserted Patents. Furthermore, the parties should ensure that all testimony that relates to the terms addressed in this Order is constrained by the Court's reasoning. However, in the presence of the jury the parties should not expressly or implicitly refer to each other's claim construction positions and should not expressly refer to any portion of this Order that is not an actual construction adopted by the Court. The references to the claim construction process should be limited to informing the jury of the constructions adopted by the Court.

SIGNED this 17th day of October, 2016.

ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE