defendant and rejected by the court in *Midway Manufacturing Co. v. Artic International, Inc.*, *supra*, slip op. at 16-18. Moreover, the rejection of a similar contention by the Second Circuit is also applicable here. The court stated:

> The [video game's] display satisfies the statutory definition of an original "audiovisual work," and the *memory devices of the game satisfy the statutory requirement of a "copy" in which the work is "fixed."* The Act defines "copies" as "material objects . . . in which a work is fixed by any method now known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device" and specifies that a work is "fixed" when "its embodiment in a copy . . . is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration." 17 U.S.C. App. §101 (1976). *The audiovisual work is permanently embodied in a material object, the memory devices*, from which it can be perceived with the aid of the other components of the game.

Stern Electronics, Inc. v. Kaufman, 669 F.2d at 855-56 (footnote omitted; emphasis added).

Defendant also apparently contends that the player's participation withdraws the game's audiovisual work from copyright eligibility because there is no set or fixed performance and the player becomes a co-author of what appears on the screen. Although there is player interaction with the machine during the play mode which causes the audiovisual presentation to change in some respects from one game to the next in response to the player's varying participation, there is always a repetitive sequence of a substantial portion of the sights and sounds of the game, and many aspects of the display remain constant from game to game regardless of how the player operates the controls. *See Stern Electronics, Inc. v. Kaufman*, 669 F.2d at 855-56. Furthermore, there is no player participation in the attract mode which is displayed repetitively without change. . . .

As noted above, the statutory definition of "fixed" determines both when a work is considered eligible for federal copyright protection (e.g., the first time it is committed to paper or to a ROM device) and what constitutes a "copy" of the protected work. Review the definitions of "copies" and "phonorecords" in §101 now. Both of these provisions incorporate the basic definition of fixation and rely on it to establish the point at which copies/phonorecords come into existence. As we explore in detail in Chapter 5, this process in turn helps to define who is an infringer. But, as the next case explains, digital technology operates by repeated, automatic copying of the files being used. Does this process, an artifact of the technology, constitute fixation? Is everyone who uses digital works therefore an infringer?

MAI Systems Corp. v. Peak Computer, Inc.

991 F.2d 511 (9th Cir. 1993), cert. dismissed, 510 U.S. 1033 (1994)

BRUNETTI, J.: . . . MAI Systems Corp., until recently, manufactured computers and designed software to run those computers. The company continues to service its computers and the software necessary to operate the computers. MAI software includes operating system software, which is necessary to run any other program on the computer.

Peak Computer, Inc. is a company organized in 1990 that maintains computer systems for its clients. Peak maintains MAI computers for more than one hundred clients in Southern California. This accounts for between fifty and seventy percent of Peak's business.

Peak's service of MAI computers includes routine maintenance and emergency repairs. Malfunctions often are related to the failure of circuit boards inside the computers, and it may be necessary for a Peak technician to operate the computer and its operating system software in order to service the machine.

In August, 1991, Eric Francis left his job as customer service manager at MAI and joined Peak. Three other MAI employees joined Peak a short time later. Some businesses that had been using MAI to service their computers switched to Peak after learning of Francis's move. . . .

IV. Copyright Infringement

The district court granted summary judgment in favor of MAI on its claims of copyright infringement and issued a permanent injunction against Peak on these claims. The alleged copyright violations include: (1) Peak's running of MAI software licensed to Peak customers. . . .

A. Peak's Running of MAI Software Licenced to Peak Customers

To prevail on a claim of copyright infringement, a plaintiff must prove ownership of a copyright and a " 'copying' of protectable expression" beyond the scope of a license. *S.O.S., Inc. v. Payday, Inc.*, 886 F.2d 1081, 1085 (9th Cir. 1989).

MAI software licenses allow MAI customers to use the software for their own internal information processing. This allowed use necessarily includes the loading of the software into the computer's random access memory ("RAM") by a MAI customer. However, MAI software licenses do not allow for the use or copying of MAI software by third parties such as Peak. Therefore, any "copying" done by Peak is "beyond the scope" of the license.

It is not disputed that MAI owns the copyright to the software at issue here, however, Peak vigorously disputes the district court's conclusion that a "copying" occurred under the Copyright Act.

The Copyright Act defines "copies" as:

> material objects, other than phonorecords, in which a work is fixed by any method now known or later developed, and from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.

17 U.S.C. §101. . . .

The district court's grant of summary judgment on MAI's claims of copyright infringement reflects its conclusion that a "copying" for purposes of copyright law occurs when a computer program is transferred from a permanent storage device to a computer's RAM. This conclusion is consistent with its finding, in granting the preliminary injunction, that: "the loading of copyrighted computer software from a storage medium (hard disk, floppy disk, or read only memory) into the memory of a central processing unit ("CPU") causes a copy to be made. In the absence of ownership of the copyright or express permission by license, such acts constitute copyright infringement." We find that this conclusion is supported by the record and by the law.

Peak concedes that in maintaining its customer's computers, it uses MAI operating software "to the extent that the repair and maintenance process necessarily involves turning on the computer to make sure it is functional and thereby running the operating system." It is also uncontroverted that when the computer is turned on the operating system is loaded into the

computer's RAM. As part of diagnosing a computer problem at the customer site, the Peak technician runs the computer's operating system software, allowing the technician to view the systems error log, which is part of the operating system, thereby enabling the technician to diagnose the problem.[4]

Peak argues that this loading of copyrighted software does not constitute a copyright violation because the "copy" created in RAM is not "fixed." However, by showing that Peak loads the software into the RAM and is then able to view the system error log and diagnose the problem with the computer, MAI has adequately shown that the representation created in the RAM is "sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration."

After reviewing the record, we find no specific facts (and Peak points to none) which indicate that the copy created in the RAM is not fixed. . . .

The law also supports the conclusion that Peak's loading of copyrighted software into RAM creates a "copy" of that software in violation of the Copyright Act. In *Apple Computer, Inc. v. Formula Int'l, Inc.*, 594 F. Supp. 617, 621 (C.D. Cal. 1984), the district court held that the copying of copyrighted software onto silicon chips and subsequent sale of those chips is not protected by §117 of the Copyright Act. Section 117 allows "the 'owner'[5] of a copy of a computer program to make or authorize the making of another copy" without infringing copyright law, if it "is an essential step in the utilization of the computer program" or if the new copy is "for archival purposes only." 17 U.S.C. §117 (Supp. 1988). One of the grounds for finding that §117 did not apply was the court's conclusion that the permanent copying of the software onto the silicon chips was not an "essential step" in the utilization of the software because the software could be used through RAM without making a permanent copy. The court stated:

> RAM can be simply defined as a computer component in which data and computer programs can be temporarily recorded. Thus, the purchaser of [software] desiring to utilize all of the programs on the diskette could arrange to copy [the software] into RAM. This would only be a temporary fixation. It is a property of RAM that when the computer is turned off, the copy of the program recorded in RAM is lost.

Apple Computer at 622.

While we recognize that this language is not dispositive, it supports the view that the copy made in RAM is "fixed" and qualifies as a copy under the Copyright Act.

We have found no case which specifically holds that the copying of software into RAM creates a "copy" under the Copyright Act. However, it is generally accepted that the loading of software into a computer constitutes the creation of a copy under the Copyright Act. *See, e.g.*, *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255, 260 (5th Cir. 1988) ("the act of loading a program from a medium of storage into a computer's memory creates a copy of the program"); 2 *Nimmer on Copyright*, §8.08 at 8-105 (1983) ("Inputting a computer program entails the preparation of a copy."); *Final Report of the National Commission on the New Technological Uses*

4. MAI also alleges that Peak runs its diagnostic software in servicing MAI computers. Since Peak's running of the operating software constitutes copyright violation, it is not necessary for us to directly reach the issue of whether Peak also runs MAI's diagnostic software. However, we must note that Peak's field service manager, Charles Weiner, admits that MAI diagnostic software is built into the MAI MPx system and, further, that if Peak loads the MAI diagnostic software from whatever source into the computer's RAM, that such loading will produce the same copyright violation as loading the operating software.

5. Since MAI licensed its software, the Peak customers do not qualify as "owners" of the software and are not eligible for protection under §117.

of Copyrighted Works, at 13 (1978) ("the placement of a work into a computer is the preparation of a copy"). We recognize that these authorities are somewhat troubling since they do not specify that a copy is created regardless of whether the software is loaded into the RAM, the hard disk or the read only memory ("ROM"). However, since we find that the copy created in the RAM can be "perceived, reproduced, or otherwise communicated," we hold that the loading of software into the RAM creates a copy under the Copyright Act. 17 U.S.C. §101. We affirm the district court's grant of summary judgment as well as the permanent injunction as it relates to this issue. . . .

NOTES AND QUESTIONS

1. Many countries, including Belgium, France, Brazil, Italy, and Germany, accord a work copyright protection as soon as it is in a form from which others can perceive it, regardless of whether it is also fixed in a tangible medium. Such works might include, for example, improvisational performances and off-the-cuff lectures. Why do you think the U.S. has elected to retain a fixation requirement? The Constitution provides that Congress may grant exclusive rights in "writings." Do works that are not fixed qualify as writings? If not, why not? Are there policy reasons that might militate in favor of requiring fixation as a condition of copyright protection? In particular, might fixation serve important evidentiary purposes?

2. *Williams* says that player participation that changes the screen display does not make the audiovisual work "unfixed" for copyright purposes. Do you agree with the court's reasoning? What about newer generations of games in which artificial intelligence and virtual reality techniques increasingly allow the player to "create" the game as he or she plays? If the display may never be repeated (because the same interaction may never occur), is it copyrightable?

3. If your copyright professor gives an off-the-cuff lecture and you make an audiotape of it, is the work thereby "fixed in a tangible medium of expression" for purposes of copyright protection? Review the first sentence of the statutory definition carefully. It appears that no copyrightable work has been created! Why do you think Congress included the phrase "by or under the authority of the author" in the definition? Now review the definitions of "copies" and "phonorecords" again. Note that neither of these definitions includes the phrase "by or under the authority of the author." Why the omission?

4. The House Report accompanying the 1976 Act states that "the definition of fixation would exclude from the concept purely evanescent or transient reproductions such as those projected briefly on a screen, shown electronically on a television or other cathode ray tube, or captured momentarily in the memory of a computer." H.R. Rep. No. 94-1476, 94th Cong., 2d Sess. 53 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5666. Is *MAI* consistent with this history?

5. How would the *MAI* reasoning apply to streamed video content stored in buffer memory in increments of 1.2 seconds, and continually overwritten? Cablevision used such an arrangement to enable a "remote DVR" system. First, Cablevision split its programming data stream into two identical streams. One stream was transmitted to Cablevision's customers, and the other was routed through a buffering device called the Broadband Media Router (BMR) (in 1.2-second increments) and then through the "primary ingest buffer" in Cablevision's remote DVR data center (in 0.1-second increments). If a customer wished to record a particular program to watch later, a dedicated copy for that customer would be created and stored in server space allocated to that customer. Otherwise, the programming data continued to pass through buffer memory, continually overwritten by new programming data. In *Cartoon*

Network LP v. CSC Holdings, Inc., 536 F.3d 121 (2d Cir. 2008), *cert. denied*, 129 S. Ct. 2890 (2009), the court held that the programming data stored in Cablevision's buffers were not fixed. The court observed:

> . . . The Act . . . provides that a work is " 'fixed' in a tangible medium of expression when its embodiment . . . is sufficiently permanent or stable to permit it to be . . . reproduced . . . *for a period of more than transitory duration*." *Id.* (emphasis added). We believe that this language plainly imposes two distinct but related requirements: the work must be embodied in a medium, i.e., placed in a medium such that it can be perceived, reproduced, etc., from that medium (the "embodiment requirement"), and it must remain thus embodied "for a period of more than transitory duration" (the "duration requirement"). . . . Unless both requirements are met, the work is not "fixed" in the buffer, and, as a result, the buffer data is not a "copy" of the original work whose data is buffered. . . .
>
> The district court's reliance on cases like *MAI Systems* is misplaced. In general, those cases conclude that an alleged copy is fixed without addressing the duration requirement; it does not follow, however, that those cases assume, much less establish, that such a requirement does not exist. Indeed, the duration requirement, by itself, was not at issue in *MAI Systems* and its progeny. . . .
>
> The *MAI Systems* court referenced the "transitory duration" language but did not discuss or analyze it. . . . This omission suggests that the parties did not litigate the significance of the "transitory duration" language, and the court therefore had no occasion to address it. This is unsurprising, because it seems fair to assume that . . . the program was embodied in the RAM for at least several minutes.
>
> Accordingly, we construe *MAI Systems* and its progeny as holding that loading a program into a computer's RAM *can* result in copying that program. We do not read *MAI Systems* as holding that, as a matter of law, loading a program into a form of RAM *always* results in copying. Such a holding would read the "transitory duration" language out of the definition, and we do not believe our sister circuit would dismiss this statutory language without even discussing it. It appears the parties in *MAI Systems* simply did not dispute that the duration requirement was satisfied; this line of cases simply concludes that when a program is loaded into RAM, the embodiment requirement is satisfied. . . .
>
> Cablevision does not seriously dispute that copyrighted works are "embodied" in the buffer. Data in the BMR buffer can be reformatted and transmitted to the other components of the RS-DVR system. Data in the primary ingest buffer can be copied onto the Arroyo hard disks if a user has requested a recording of that data. Thus, a work's "embodiment" in either buffer "is sufficiently permanent or stable to permit it to be perceived, reproduced," (as in the case of the ingest buffer) "or otherwise communicated" (as in the BMR buffer). 17 U.S.C. §101. The result might be different if only a single second of a much longer work was placed in the buffer in isolation. In such a situation, it might be reasonable to conclude that only a minuscule portion of a work, rather than "a work" was embodied in the buffer. Here, however, where every second of an entire work is placed, one second at a time, in the buffer, we conclude that the work is embodied in the buffer.
>
> Does any such embodiment last "for a period of more than transitory duration"? *Id.* No bit of data remains in any buffer for more than a fleeting 1.2 seconds. And unlike the data in cases like *MAI Systems*, which remained embodied in the computer's RAM memory until the user turned the computer off, each bit of data here is rapidly and automatically overwritten as soon as it is processed. While our inquiry is necessarily fact-specific, and other factors not present here may alter the duration analysis significantly, these facts strongly suggest that the works in this case are embodied in the buffer for only a "transitory" period, thus failing the duration requirement.

Id. at 127-30 (emphasis in original). Do you agree with the court's reading of the statute? Is the court correct in concluding that its interpretation of the statutory definition is consistent with the *MAI* court's interpretation? If not, which interpretation is preferable as a policy matter?

6. Based on the reasoning in *MAI*, are the following "fixed" (or "copies") under §101? Does the reasoning in *Cartoon Network* cause any of your answers to change?

a. images retrieved from web sites by your browser when you are surfing the web;
b. cache (temporary storage that allows fast retrieval. For example, when you load a web page, a copy often resides in cache on your computer. Cache allows retrieval to occur more quickly than it would if your computer queried the server on which the page resides. The contents in cache generally remain for the period defined by your browser software);
c. e-mail;
d. online chat;
e. a YouTube video that you are watching as it is streamed to your computer.

7. Congress amended §117 of the Act in the wake of *MAI*. Read §117(c)-(d). We return to §117 in Chapter 5.

b. A Technology-Specific Approach: Transmission and Contemporaneous Fixation, and the Problem of Bootleg Recordings

The first sentence of the definition of "fixed" creates a problem for live transmissions: Is a song or television program that is performed over the airwaves embodied in a copy that is sufficiently stable for it to be perceived for "a period of more than transitory duration" as required for protection under U.S. copyright law? Broadcasts are clearly able to be perceived by their intended audiences. Failure to protect broadcasts would produce the paradoxical result that no one could claim a copyright right to control dissemination of a work via a medium capable of reaching thousands or even millions of listeners or viewers simultaneously. This problem also illustrates the difference between U.S. copyright law and that of other countries that accord protection to perceptible works regardless of fixation.

To solve this problem while still retaining a fixation requirement in U.S. copyright law, Congress chose a narrow, situation-specific solution, which contrasts sharply with the broad, technology-neutral approach adopted in the first sentence of the statutory definition of "fixed." The second sentence of that definition states: "A work consisting of sounds, images, or both, that are being transmitted, is 'fixed' for purposes of this title if a fixation of the work is being made simultaneously with its transmission." 17 U.S.C. §101. According to the legislative history, this sentence resolved

> the status of live broadcasts — sports, news coverage, live performances of music, etc. — that are reaching the public in unfixed form but that are simultaneously being recorded. When a football game is being covered by four television cameras, with a director guiding the activities of the four cameramen and choosing which of their electronic images are sent out to the public and in what order, there is little doubt that what the cameramen and the director are doing constitutes "authorship." The further question to be considered is whether there has been a fixation. If the images and sounds to be broadcast are first recorded (on a video tape, film, etc.) and then transmitted, the recorded work would be considered a "motion picture" subject to statutory protection against unauthorized reproduction or retransmission of the broadcast. If the program content is transmitted live to the public while being recorded at the same time, the case would be treated the same; the copyright owner would not be forced to rely on common law rather than statutory rights in proceeding against an infringing user of the live broadcast.

> Thus, assuming it is copyrightable — as a "motion picture" or "sound recording," for example — the content of a live transmission should be regarded as fixed and should be accorded statutory protection if it is being recorded simultaneously with its transmission.

H.R. Rep. No. 94-1476, 94th Cong., 2d Sess. 52-53 (1976), *reprinted in* 1976 U.S.C.C.A.N. 5659, 5665-66.

Strict construction of the statutory provision for fixation of broadcast transmissions can lead to an anomalous result: When a live performance of a work is given to an audience present at the location of the performance, a contemporaneous recording technically does not qualify as "fixed" under the second sentence of the statutory definition, which covers only works "that are being transmitted." Only if that live performance is also simultaneously transmitted, for example by either radio or television, will the contemporaneous recording satisfy the second sentence of the definition. Arguably, a contemporaneous recording of a live performance that is not being transmitted could still qualify as a fixation *of the work being performed* under the first sentence of the statutory definition as long as it is prepared by or under the authority of the author. However, the leading treatise on copyright law takes the opposite view. *See* Melville B. Nimmer & David Nimmer, 1 *Nimmer on Copyright* §1.08[C][2], at 1-115 (concluding that the second sentence of the definition sets forth the only circumstances in which "the simultaneous recordation concept" can effect a fixation).

Almost as soon as the 1976 Act took effect, it became apparent that this statutory construction debate had important real-world ramifications. In the mid-1970s, consumer electronics companies began widely marketing good-quality audiotape recording equipment at prices that ordinary individuals could afford. As a result, the practice of making and distributing audience-prepared recordings of live performances — known as "bootleg" recordings — became more common. Absent copyright protection for the live performance, this conduct would not violate any copyright rights belonging to the performer.[1] As discussed above, it was unclear that the performer could cause copyright to subsist in the performance by making a simultaneous recording. Some performers — most notably the Grateful Dead — encouraged bootleg recordings, but many others objected. Why might a performing artist encourage the creation and distribution of bootleg recordings? What laws might artists use to seek protection against such conduct in the absence of copyright?

In 1994, Congress enacted an amendment to the Copyright Act to implement the TRIPS Agreement, which requires protection for live musical performances. Section 1101(a) prohibits the fixation or transmission of a live musical performance without the consent of the performers, and also prohibits the reproduction or distribution of copies or phonorecords of an unauthorized fixation of a live musical performance. Does this legislation protect "unfixed" works? May it constitutionally do so? How can Congress consider live performances to be "writings"? If the legislation is not authorized under the Intellectual Property Clause, might it pass constitutional muster under the Commerce Clause?

In *United States v. Moghadam*, 175 F.3d 1269 (11th Cir. 1999), the Eleventh Circuit rejected a constitutional challenge to the criminal version of the anti-bootlegging legislation, 18 U.S.C. §2319A, based on the "Writings" requirement of the Intellectual Property Clause. The court concluded that the extension of legal protection to unfixed performances was a valid exercise of Congress' commerce power because it also served to promote creativity, and therefore was not "fundamentally inconsistent" with the Intellectual Property Clause. *Id*. at 1282.

1. If the *work* being performed — e.g., a musical composition or dramatic monologue — were protected by copyright, the bootlegger would need permission from the copyright owner of that work to make copies of the tape and distribute them. You will learn about the complicated field of music copyrights in Chapter 5.G.

It reserved judgment on whether §2319A, which specifies no time limits, was fundamentally inconsistent with the Intellectual Property Clause's reference to "limited Times" because the defendant had not raised that challenge in the district court proceedings. Considering the "limited Times" question, the Second Circuit opined that a legislative enactment implicates the Intellectual Property Clause only when it creates or bestows property rights in expression. Because the criminal anti-bootlegging legislation simply "creates a power in the government to protect the interests of performers from commercial predations," it was not an exercise of the Intellectual Property power and the limitations on that power therefore did not apply. *United States v. Martignon*, 492 F.3d 140, 151 (2d Cir. 2007). The court reserved judgment on the constitutionality of the *civil* anti-bootlegging provision, which was not at issue in the case before it. If the civil provision were to be challenged as violating the "limited Times" requirement, how should a court rule? *See KISS Catalog v. Passport International Prods.*, 405 F. Supp. 2d 1169, 1175 (C.D. Cal. 2005) (declining to evaluate §1101(a) for fundamental inconsistency with the Intellectual Property Clause as long as "an alternative source of constitutional authority" existed). We will return to questions about constitutional limits, in Chapter 10.

Regardless of constitutional questions, do §§1101 and 2319A represent good policy? Why provide special protection for musical performers but not for the comedian doing a stand-up act at a comedy club? Is there some economic or other policy reason to treat musical performers differently?

Both the second sentence of the §101 definition of "fixed" and the special protection granted to live musical performances under §1101 are narrow, medium-specific solutions to known problems. Such a legislative approach is not necessarily undesirable simply because the statutory language will not stretch to cover new problems. As the discussion of fixation and digital works above illustrates, broad legislative drafting has its own perils. Where eligibility for copyright protection is concerned, is it better to err on the side of underinclusiveness or overinclusiveness? You will see many more examples of both types of drafting in the Copyright Act. Learn to recognize these styles of drafting, and to evaluate their advantages and disadvantages.

2. Originality

The second requirement for copyrightability is that a work be an "original work[] of authorship." 17 U.S.C. §102(a). Once again, neither the Berne Convention nor the TRIPS Agreement expressly imposes any requirement of originality or creativity, although both agreements assume an authorial presence. Nonetheless, nearly all countries require some level of creativity as a prerequisite for copyright protection. To see why, consider whether it would make sense to grant exclusive rights to someone who merely copies a preexisting work. There is general agreement that it would not. From an economic perspective, the mere copyist has supplied nothing to justify the cost of a grant of copyright; from a non-economic perspective, the copyist has supplied nothing of his or her "own." But what level of originality is most likely to accomplish copyright law's goals? Should the law award exclusive rights to anyone who can show simply that he or she has not copied a preexisting work? Or should the law require more? In a sense, isn't every author a secondcomer because he or she builds on prior works? How much should a secondcomer have to add to the store of knowledge to merit the grant of a copyright? Can economic arguments help to answer this question? What about non-economic arguments? As you will see, it is possible to define the term *originality* in different ways.

Although U.S. copyright law has always required originality as a condition of copyright protection, it has not always done so expressly. Instead, courts found an originality requirement