INTELLECTUAL PROPERTY RIGHTS IN VIRTUAL ENVIRONMENTS: CONSIDERING THE RIGHTS OF OWNERS, PROGRAMMERS AND VIRTUAL AVATARS

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ABSTRACT

A virtual environment is a computer-generated world that can be used for training, data visualization, recreation, and commerce. The visitors of virtual environments include not only humans but also virtual avatars. The avatars can take on a range of shapes, characteristics, and personalities, and can perform a variety of tasks within the virtual environment. As the behavior of avatars becomes more realistic, sophisticated and intelligent- and the avatars become more autonomous in their decision making, the question of whether virtual avatars should have legal rights separate from those of their owner becomes an issue. This paper discusses legal rights associated with the design and use of virtual avatars, commenting on the ownership rights of the creators of virtual avatars and the rights of avatars themselves should they gain intelligence and become independent decision makers and creators of intellectual property.

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I. INTRODUCTION

A virtual environment is an interactive computer simulation[2] which lets its participants see, hear, use and even modify the simulated objects in the computer-generated environment.[3] Within a virtual environment, the user may be stimulated by a range of sensory information including spacialized sound,[4] stereoscopic imagery;[5] and force[6] or tactile feedback[7] delivered by input devices paired to virtual objects.[8] Some commentators have argued that developments in virtual environments are occurring so rapidly that humans may "inhabit" them within the foreseeable future.[9] Although this may seem like a bold prediction, currently, many people are

[2] Science fiction author William Gibson is credited with coining the term cyberspace in his novel *Neuromancer* (Ace books 1984). *See generally* William S. Byassee, *Jurisdiction of Cyberspace: Applying Real World Precedent to the Virtual Community*, 30 Wake Forest L. Rev. 197, 220 (1995).

[3] Tom Furness III & Woodrow Barfield, *Introduction to Virtual Environments and Advanced Interface Design,* ch. 1 in Virtual Environments and Advanced Interface Design (Woodrow Barfield & Tom Furness III eds., Oxford University Press 1995).

[4] Elizabeth M. Wenzel, Scott S. Fisher, Philip. K. Stone & Scott. H. Foster, *A System for Three-Dimensional Acoustic "Visualization" in a Virtual Environment Workstation,* at 329-337, in Proceedings of the 1st Conference on Visualization (IEEE Computer Society Press 1990); *See* Elizabeth M. Wenzel, Frederic L. Wightman & Scott H. Foster, *Development of a Three-Dimensional Auditory Display System*, 20 ACM SIGCHI Bulletin 52 (1988).

[5] The viewing of stereoscopic imagery within a virtual environment may or may not be head tracked using a multi-degree of freedom position tracker. When head tracked, the view of the virtual world changes in response to movements of the user's head.

[6] Pietro Buttolo, Roberto Oboe & Blake Hannaford, *Architectures for Shared Haptic Virtual Environments*, 21 Computers & Graphics 421 (July-Aug. 1997).

[7] Grigore C. Burdea & Philippe Coiffet, *Virtual Reality Technology* (2nd Edition*,* Wiley-IEEE Press, New York 2003).

[8] The author will use the terms "virtual environment" and "virtual reality" interchangeably, both refer to a computer-generated simulation designed to allow a user to experience a sense of presence in the computer simulation.

[9] Beth Simone Noveck, *Introduction: The State of Play*, 49 N.Y.L. Sch. L. Rev. 1 (2004-2005).

already spending significant amounts of time in virtual environments.[10] One reason for the significant amount of time spent in virtual environments is that the participants interacting with the environment may experience a sense of presence.[11] Presence is the suspension of disbelief that one is viewing a simulation, that is, the sense of actually "being there," in the computer simulation.[12] More realistic virtual environments have been shown to lead to a higher sense of presence, and it has been shown that one way to increase the realism of a virtual environment is by projecting virtual avatars in the environment that have the ability to interact with humans.[13]

A particular type of virtual environment that is accessed by millions of users and that has generated significant interest from legal scholars is a multi-player online role-playing game (MMORPG).[14] One interesting feature of a MMORPG is that it allows its participants to design a virtual avatar representation of their identity in the online virtual environment. Once a player enters a MMORPG, they engage in a variety of activities with other players who are accessing the game the same way from all over the world. MMORPG developers are in charge of supervising the virtual world and offering the users an updated set of tasks and activities to perform in the virtual environment to guarantee the continuing interest of players.[15] Most

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[10] J. D. Lasica, *Darknet, Hollywood's War Against the Digital Generation* (John Wiley & Sons 2005).

[11] Woodrow Barfield & Suzanne Weghorst, *The Sense of Presence Within Virtual Environments: A Conceptual Framework*, at 699-704, in Human Computer Interaction: Software and Hardware Interfaces (Gavriel Salvendy & Michael Smith, eds., Elsevier Science Publishers 1993).

[12] *Id*.

[13] *See generally* Kristine L. Nowak, *The Influence of Anthropomorphism and Agency on Social Judgment in Virtual Environments,* 9 JCMC (2004), *available at* http://jcmc.indiana.edu/vol9/issue2/nowak.html (last visited Oct. 31, 2005).

[14] Caroline Bradely & A. Michael Froomkin, *Virtual Worlds, Real Rules*, 49 N.Y.L. Sch. L. Rev. 103, 121 (2004-2005).

[15] Cory Ondrejka, *Escaping the Gilded Cage: User Created Content and Building the Metaverse*, 49 N.Y.L. Sch. L. Rev. 81 (2004-2005). *See also*, Nicholas Yee, *The Psychology of MMORPGs: Emotional Investment, Motivations, Relationship Formation, and Problematic Usage* (2005 in press) to appear in Avatars at Work and Play: Collaboration and Interaction in Shared Virtual Environments (R. Schroeder & A. Axelsson eds., London: Springer-Verlag), PDF file *available at* http://www.nickyee.com/daedalus/archives/02_04/Yee_Book_Chapter.pdf (last visited Oct. 31, 2005).

MMORPGs have been designed for profit, in that a player must either purchase the client software or pay a monthly fee in order to continually access the role-playing virtual world.[16]

One of the issues in online games is whether the licensor or participant owns the virtual property created.[17] In a popular online game, Second Life,[18] under the Terms of Service agreement the residents' of the virtual world have the right to retain full intellectual property protection for the digital content they create in the game, including avatar characters, clothing, scripts, textures, objects and designs. Such rights have real-world consequences for the objects created in the virtual world. For example, as stated on Second Life's webpage, "This right is enforceable and applicable both in-world and offline, and for non-profit and commercial ventures."[19]

The term "virtual avatar" is often used to describe the simulation of a graphical form representing a particular person in a virtual environment.[20] The most sophisticated avatars can become a sort of visual and cognitive prosthesis, representing an extension of self in the virtual environment, or what the virtual environment visitor would like to be, or appear to be in the virtual world. Virtual avatars may also represent the actions of a user, different aspects of a user's persona, or the user's social status in the virtual environment.[21] And a virtual avatar can take on almost any form, such as a realistic representation of the human that owns or created the avatar, another person's identity (such as a living or deceased actor or historic figure), an animal,

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[16] There are some free online games, but their quality is generally lower compared to their pay-to-play counterparts.

[17] Some foreign courts have begun to accept the notion of virtual property; last December a Beijing court ordered the restitution of one player's stolen virtual weapons, *see e.g.* Amy Kolz, *Virtual IP Rights Rock Online Gaming World* (12-06-2004), *available at* http://www.law.com/jsp/article.jsp?id=1101738506769 (last visited Oct. 31, 2005).

[18] *Second Life*, *available at* http://secondlife.com/commerce/ip.php (last visited Oct. 31, 2005).

[19] *Id*.

[20] It is possible to purchase virtual avatars of different levels of fidelity, *see e.g.,* http://ds.avatarwares.com/awbodiesds.htm (last visited, Oct. 31, 2005). Avatars are also called: characters, players, virtual actors, icons, or virtual humans.

[21] The traditional avatar used on many internet forums is a small square shaped area close to the user's forum post, where the avatar is placed, *see* http://www.wikipedia.org/Avatar-(virtual reality) (last visited Nov. 9, 2005).

or even a mythical creature. How easy is it to create a virtual avatar? Commercial software has been designed to allow people to easily create their own interactive, emoting 3D avatar using photographs of their individual faces, and their own unique voice as templates.[22] Further, when a person chats in a 3D online world or plays one of many online computer games, they are operating a synthetic character or avatar. What makes for an interesting and effective avatar depends on the purpose in which the avatar is used. In the case of a virtual world where communication is important, facial features and expressiveness must be well supported; in the case of action games, physics and interaction with the world must be well supported.

One of the recent trends for virtual avatars is that they are getting smarter.[23] With the ability to perform a range of tasks, virtual avatars can be programmed to write poetry, play chess, compose music, and portray a range of emotions and facial expressions.[24] In electronic commerce,[25] avatars are forming contracts,[26] in the field of entertainment they are replacing actors,[27] and in online games,[28] avatars are interacting with humans and other virtual avatars.[29] In medicine, virtual avatars are helping to train medical students; for example, the Virtual Standardized Patient is an avatar that interacts with medical practitioners in much the same way

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[22] *See* Haptek's *PeoplePutty available at* http://www.haptek.com/ (last visited Oct. 31, 2005).

[23] W. Lewis Johnson & Jeff W. Rickel, *Agents: Face-to-Face Interaction in Interactive Learning Environments*, 11 International Journal of Artificial Intelligence in Education 47 (2000), *available at* http://aied.inf.ed.ac.uk/members00/archive/vol_11/johnson/full.tml (last visited Oct. 31, 2005).

[24] *Talking Heads, available at* http://www.haskins.yale.edu/haskins/heads.html (last visited Oct. 31, 2005).

[25] Ian R. Kerr, *Bots, Babes and the Californication of Commerce*, 1 University of Ottawa Law and Technology Journal 285 (2004) (discussing intelligent software that has made significant advances in the field of electronic commerce, and stating that there is a trend in automated electronic commerce to animate avatars and other electronic entities and use them to build relationships with consumers through the illusion of friendship).

[26] Jeff C. Dodd & James A. Hernandez, *Contracting in Cyberspace*, 1998 Computer L. Rev. & Tech. J. 1, 12 (1998).

[27] Joesph J. Beard, *Clones, Bones, and Twilight Zones: Protecting the Digital Persona of the Quick, the Dead and the Imaginary,* 16 Berkeley Tech. L. J. 1165 (2001).

[28] Norman I. Badler, Rama Bindiganavale, Juliet Bourne, Jan Allbeck, Jianping Shi & Martha Palmer*, Real Time Virtual Humans***,** Center for Human Modeling and Simulation, Department of Computer and Information Science, University of Pennsylvania, *available at* http://www.cis.upenn.edu/~badler/bcs/Paper.htm (last visited Oct. 31, 2005).

[29] *See generally* Tolga K. Capin, Igor S. Pandzic, Nadia Magnenat-Thalmann & Daniel Thalmann (eds.), *Avatars in Networked Virtual Environments (*John Wiley & Sons 1999); *see generally* Peter Plantec, *Virtual Humans: A Build-It-Yourself Kit, Complete With Software and Step-By-Step Instructions* (American Management Association; Bk&CD-Rom edition 2004).

as an actor would if hired to play the role of patient.[30] The Virtual Standardized Patient uses natural language processing, emotion, behavior modeling, and composite facial expression and lip-shape modeling to produce a natural patient-practitioner dialogue.[31]

Virtual environments can be designed for single inhabitants, such as a solo flight trainee, or for many, simultaneous participants. When a virtual environment supports multiple users, it can give rise to a virtual community. It has been estimated that many of the 20-30 million[32] people who visit virtual worlds spend more time in the virtual environment than the real world,[33] and they are not just passively viewing the environment, they or their virtual representative are interacting with other people or with virtual avatars of increasing intellectual capabilities. People that spend significant amounts of time in virtual environments are doing more than playing video games, according to one commentator, they are creating virtual environments where they can assume identities, build wealth and social status, and generally participate in creating new worlds.[34]

ISSUES IN VIRTUAL REALITY

The present format for the protection of the rights of virtual avatars is based on determining who their owner is, and then analyzing that person's rights with respect to the avatar or the avatar's actions.[35] In this model the rights protected are those of the owner, and not those of the avatar. However, as the virtual avatar gains in intelligence and creates works independent

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[30] Robert C. Hubal, Paul N. Kizakevich, Curry I. Giunn, Kevin D. Merino & Suzanne L. West, *The Virtual Standardized Patient: Simulated Patient-Practitioner Dialogue for Patient Interview Training, available at* http://www.cs.duke.edu/~cig/papers/MMVR.doc (last visited Oct. 31, 2005).

[31] *Id*.

[32] Dan Hunter & F. Gregory Lastowka, *Norrath, To Kill an Avatar* (stating that the online world created by Sony, has more residents than Miami and a bigger GNP than Bulgaria), *available at* http://www.legalaffairs.org/issues/July-August-2003/feature_hunter_julaug03.html (last visited 10-31-2005).

[33] The Themis Group, *The Themis Report, 2002: Hot Topics in Online Games, available at* http://www.themis-group.com/uploads/Funcom%20Case%20Study.pdf (last visited Oct 31, 2005).

[34] Noveck, *supra* note 9, at 2.

[35] *See generally,* Woodrow Barfield, *Issues of Law for Software Agents Within Virtual Environments*, ___ Presence: Teleoperators and Virtual Environments ___ (forthcoming 2005).

of human input, this analysis may be outdated suggesting that avatars may themselves need legal protection. As virtual worlds and virtual avatars become increasingly more complex, and people spend more time in virtual worlds, significant legal and policy issues may arise.[36] For example, since many virtual worlds are created by private companies for their subscribers and are thus controlled by the games creators, should the participants, the game creators, or the intelligent avatars (or some combination) set and control the permissible actions in the virtual environment?[37] In contrast, should the users of the virtual environment set the rules of social interactions, the physical laws that govern the virtual world, or the laws and statutes that people and avatars live by?[38] And as virtual avatars become more autonomous from human input and decision-making, and self-program,[39] how should such entities be treated by the law? [40]

While there have been no cases dealing directly with the rights of intelligent virtual avatars, there have been a few cases dealing with issues relating generally to virtual reality.[41] One emerging area where virtual environments have been used in a legal context is the reconstruction of evidence of a crime scene.[42] In a recent case,[43] the defendant was convicted of

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[36] Michael B. Sapherstein, *The Implications of Virtual Reality Games for Tort Lawyers,* B.C. Intell. Prop. & Tech. F. 112106 (1996) (discussing the tort consequences of using virtual reality games such as reports that users may suffer from side effects including vertigo and dizziness after exposure to virtual environments), *available at* http://www.bc.edu/bc_org/avp/law/st_org/iptf/headlines/content/1996112106.html (last visited Nov. 1, 2005).

[37] Richard A. Bartle, *Virtual Worldliness: What Imaginary Asks of the Real*, 49 N.Y.L. Sch. L. Rev. 19 (2004-2005) (the elements of an end-user license agreement could effectively limit the range of permissible actions allowed in a virtual environments). *See generally* Lawrence Lessig, *The Limits in Open Code: Regulatory Standards and the Future of the Net,* 14 Berkeley Tech. L.J. 759, 763 (1999).

[38] *See generally* Lessig, *Id.* (on the topic of regulatory standards applied to the net).

[39] There are several commercial products on the marketplace that claim to self-learn; *see, e.g.,* Ambrogio Evolution Robot Lawn Mower has the capability "to self program in complete autonomy," *available at* http://www.robotshop.ca/.home/products/personal-domestic-robots/robot-mowers/zucchetti-ambrogio-robot-mower-evolution-robot-mower-html (last visited Nov. 7, 2005). Many computer vision systems are also said to have the ability to learn, *see, e.g.*, *ipd Releases Sherlock*, *available at* http://news.thomasnet.com/fullstory/26591 (last visited Nov 6, 2005).

[40] *See generally* Curtis E.A. Karnow, *Liability for Distributed Artificial Intelligences*, 11 Berkeley Tech. L. J. 147 (1996).

[41] Ian R. Kerr*, Spirits in a Material World: Intelligent Agents as Intermediaries in Electronic Commerce*, 22 Dalhousie L.J. 190, 208 (2001) (describing how neural nets work in the context of electronic commerce).

[42] *Harris v. The State of Texas*, 152 S.W.3d 786 (2004).

[43] *See Id*.

murder and sentenced to confinement for 20 years. As part of the evidence presented, a virtual reality recreation of the route driven to strike the victim was shown in court. The Court of Appeals held that the trial court did not abuse its discretion by concluding that the probative value of the virtual reality crime scene re-creation was not substantially outweighed by the danger of misleading the jury.[44]

Another case dealing with the general area of virtual reality concerned a defendant's claim that she was a cyborg.[45] Here, the district court decided the issue of *sua sponte* dismissal of Taylor's claim. To summarize the facts presented in the "cyborg" case, the plaintiff asserted that she was a cyborg and received her information through "proteus." Among other things, the plaintiff alleged that former President Jimmy Carter was the secret head of the Ku Klux Klan, and that he, Bill Clinton and Ross Perot were responsible for the murder of at least ten million black women in concentration camps.[46] The court justified the *sua sponte* dismissal of the complaint by holding that the standard for dismissal of claims under 28 U.S.C. § 1915 was met.[47] In a similar case,[48] the defendant, a pro se Michigan prisoner, appealed the district court's order dismissing as frivolous his civil rights complaint.[49] The defendant based his claims for monetary and injunctive relief upon alleged violations of his Eighth Amendment protection against cruel and unusual punishment. He alleged that he was the victim of defendants' experiments in cybernetics; and maintained that his psychological and physical well-being was undermined by

[44] *Id*.; Fed. R. Evid. 401 (2004).
[45] *Tyler v. Carter*, 151 F.R.D. 537 (S.D. N.Y. 1993).
[46] *Id*.
[47] Proceedings *in forma pauperis* are frivolous when such claims describe fantastic or delusional scenarios.
[48] *Nunnery v. Michigan Department of Corrections*, 966 F.2d 1453 (6th Cir. 1992).
[49] Civil Action for Deprivation of Rights, 42 U.S.C. § 1983**.** If an avatar gained legal status, could such an entity claim that its civil rights had been violated? For a discussion of equal protection law in the context of enhanced humans, *see* George Wright, *Personhood: 2.0: Enhanced and Unenhanced Persons and the Equal Protection of the Laws*, 23 Quinnipiac L. Rev. 1047 (2005).

defendants' use of a computer-generated "virtual reality."[50] The Sixth Circuit concluded that the district court had not abused its discretion by dismissing the complaint as frivolous within the meaning of 28 U.S.C. § 1915(d).

A more traditional action concerning virtual reality dealt with the issue of patent infringement for an input device used to manipulate objects in virtual environments.[51] In this case the plaintiff alleged that the **"**Robinson glove" used to manipulate virtual objects was infringed by a similar glove produced by Fakespace. The court held that the allegedly offending glove did not infringe the Robinson patent under either literal infringement[52] or the doctrine of equivalents.[53] Fakespace argued that its Pinch Glove System did not literally infringe the Robinson patent because it lacked four of the claim limitations shown in the Robinson patent.[54] Because failure to demonstrate equivalency for any single element in the accused device is enough to defeat an assertion of infringement under the doctrine of equivalents,[55] the court upheld the grant of summary judgment of non-infringement.[56]

In summary, the above cases and discussion indicates that as people spend significant amounts of time in virtual reality, we can expect to see more cases across a broad spectrum; from intellectual property to criminal law, and from contracts to torts. And given the increased use of

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[50] Nunnery, *supra* note 48.
[51] *See generally Robinson v. Fakespace Labs, Inc*, U.S. App. Lexis 3914 (unpublished decision) (Fed. Cir 2003), 540 U.S., cert denied (2003).
[52] *Id*.; *See generally*, *Riles v. Shell Exploration & Prod. Co.*, 298 F.3d 1302 (Fed.Cir. 2002) (to prove literal infringement, the patentee must show that the accused device contains every limitation in the asserted claims).
[53] Robinson, *supra* note 51; *see generally Graver Tank Mfg Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950) (discussing the doctrine of equivalents).
[54] Robinson, *Id*.; *see generally Warner-Jenkinson Co. v. Hilton Davis Chem. Co.,* 520 U.S. 17 (1997) (discussing the issue of claim limitations in a patent infringement case).
[55] *See generally Eagle Comtronics, Inc. v. Arrow Communication Labs., Inc.,* 305 F.3d 1303 (Fed. Cir. 2002) (discussing the doctrine of equivalents).
[56] Robinson, *supra* note 51.

virtual avatars for tasks in virtual environments such as psychotherapy,[57] teaching,[58] and electronic commerce,[59] future causes of action could be directed at the avatars themselves. One can also wonder whether avatars that gained legal status would be able to bring forth claims involving their civil liberties.[60] And just what civil liberties would be awarded intelligent entities? *Wright* has discussed the issue of equal protection under the law in the context of "enhanced humans" concluding that "…if there develops a typically unbridgeable gulf separating groups of contemporaries, we must adopt a substantially realistic understanding of equal protection that involves significant resource and opportunity transfers."[61] *Wright's* interesting comments were directed at the differences that may occur between enhanced and unenhanced humans; intelligent avatars may bring up significant new issues of equal protection under the law. In the context of humans, it may be technically possible to provide those requesting upgrades, access to the appropriate technology. However, if an intelligent avatar surpassed humans in intelligence, would technology be available to upgrade the humans? And if an intelligent avatar gained a level of intelligence such that they were superior to humans; would humans then be able to bring forth an equal protection claim against avatars? Possibly, to best serve humanity's interests, public policy would be served by granting intelligent entities legal rights; if for no other reason than they could then be regulated.

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[57] J. Ku, W. Cho, J-J. Kim, A. Peled, B.K. Wiederhold, M.D. Wiederhold, I. Y. Kim, J.H. Lee & S.I. Kim, *A Virtual Environment for Investigating Schizophrenic Patients' Characteristics: Assessment of Cognitive and Navigation Ability,* 6 CyberPsychology & Behavior 397 (2003).

[58] Jeffrey Young, *Virtual Reality on a Desktop Hailed as New Tool in Distance Education*, The Chronicles of Higher Education, Information Technology (October 6, 2001), *available at* http://chronicle.com/free/v47/i06/06a04301.htm (last visited Oct. 30, 2005).

[59] Anthony J. Bellia, *Contracting with Electronic Agents*, 50 Emory L.J. 1047 (2001).

[60] A legal person, as opposed to a natural person, enjoys many of the rights and obligations of individual citizens, such as the ability to own property, sign binding contracts, and pay taxes; but they do not retain all the rights of a natural person, e.g., they do not have the right to vote or hold public office, *see* http://en.wikipedia.org/wiki/Corporation (last visited Nov. 10, 2005).

[61] Wright, *supra* note 49, at 1095.

II. CREATING INTELLIGENT VIRTUAL AVATARS

The field of artificial intelligence has provided many of the algorithms and techniques that have lead to intelligent actions by virtual avatars.[62] The software and algorithms that control virtual avatars, and artificial entities in general, are getting more sophisticated and "smarter;"[63] and as some commentators have argued, the smarter they get, the more the current law will be stressed when deciding how to account for their actions.[64] In general, advances in algorithms have resulted in levels of creativity exhibited by artificial entities that traditionally were considered only within the domain of humans.[65] This raises several perplexing questions- can an avatar be an author, an inventor, own and sell intellectual property, or be liable for their actions?[66]

Many software programs which result in creative output use either knowledge-based systems,[67] genetic algorithms,[68] or neural networks.[69] Neural networks[70] differ from traditional

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[62] Algorithms are used to produce goal solutions by means of a series of tests; whereas, another artificial intelligence technique, heuristics, solves a problem by intuition and anticipation of the forthcoming data.

[63] *See generally* Laura Daly, *Present and Future Avatars*, *available at* http://www.e3dnews.com/e3d/Issues/200112-Dec/lead.html (last visited Nov. 1, 2005).

[64] *See generally* Barfield, *supra* note 35; *see generally* Karnow, *supra* note 40.

[65] *See generally* Bob Fink, *Serendipity: Computer Program Composes Beautiful Melodies,* the Serendipity computing system is described as taking not only notes of the scale and making melodies of them, but of using 2 or 3-note sub-sets based on how frequently certain basic music structures are used in the music style desired, and also drawing upon these sub-sets, *available at* http://www.greenwych.ca/serend4.htm (last visited Nov. 1, 2005); *see also Artificial Intelligence in Music and Art*, the 18th International FLAIRS Conference, to be held May 15 to 17, 2005; *see generally* Chris Dobrian, *Music and Artificial Intelligence* (1993), *available at* http://music.arts.uci.edu/dobrian/CD.music.ai.htm, (last visited Nov. 1, 2005).

[66] *See* Pamela Samuelson, *Allocating Ownership Rights in Computer-Generated Works,* 47 Pitt. L. Rev. 1185 (1985-1986) (providing a comprehensive overview of issues associated with whether a computer can be an author); *see generally* Karnow, *infra* note 327.

[67] Tom R. Addis, *Designing Knowledge-Based Systems* (Prentice Hall 1986).

[68] Genetic algorithms consist of programs based on strings of symbols that behave analogous to genes. These programs may compete in a common soup and reproduce and mutate their basic gene strings over time.

[69] Neural networks consist of software that replicates the behavior of biological neural networks, carrying symbolic or numeric signals around pathways which sum and split the signals. Neural networks are used in pattern recognition and learning and lie at the heart of behaviors of agents, bots, biota and virtual pets. Neural networks are expected to provide a more fundamental 'wiring' of virtual cyberspace in the near future, *available at* http://www.digitalspace.com/avatars/book/appendix/glossary.htm (last visited Nov. 1, 2005).

[70] *See generally* Nicolas D. Georganas & Emil M. Petriu, *VEHICLE: Virtual Environments for Human Interaction, Communication and Learning, available at* http://www.mcrlab.uottawa.ca/research/VEHICLE.html (last visited Nov. 1, 2005).

artificial intelligence applications because they do not require explicit symbolic representations to solve problems. Instead they process and store information as patterns to represent information. Specifically, the knowledge contained within a neural network is represented by the connection strengths between processing elements in the network,[71] and the mutual reinforcement or inhibition of elements in the network by other elements. One area where neural networks have been used to create virtual avatars which display intelligent behavior is in the design of facial expressions.[72] For intelligent avatars to be able to act as alter-egos of their human owner they may need to incorporate a high degree of similarity with their owner; including facial expressions and other forms of behavior.[73] Neural networks can be trained to recognize and reproduce patterns such as those associated with facial expressions, and to produce such patterns based on external stimuli.

Another type of computing paradigm which has resulted in intelligent behavior for virtual avatars is an expert- or knowledge-based system.[74] Knowledge-based systems are those in which the computer algorithms are able to "learn" which solutions are retainable/usable by a series of comparisons with previously-stated material.[75] This type of programming is often referred to as an "expert system" because the expert system is based on imitating the methods of particular human practitioners or expert within a particular domain.[76] As with neural networks, an expert-system approach has been used to model facial expressions for virtual avatars. When avatars

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[71] *See Artificial Neural Networks*, *available at* http://www.psych.utoronto.ca/~reingold/courses/ai/nn.html (last visited Oct. 26, 2005).

[72] *See generally* Norman I. Badler, Rama Bindiganavale, Juliet Bourne, Jan Allbeck, Jianping Shi & Martha Palmer, *Real Time Virtual Humans*, Center for Human Modeling and Simulation, Department of Computer and Information Science, *available at* http://www.cis.upenn.edu/~badler/bcs/Paper.htm (last visited June 3, 2005).

[73] *See generally Avatar Physics and Genetics*, *Social Aspects*, *available at* http://www.ventrella.com/Alife/Avatar/avatar_4.html (last visited Nov. 1, 2005).

[74] Jimena Olveres, Mark Billinghurst, Jesus Savage & Alistair Holden, *Intelligent, Expressive Avatars***,** in Proceedings of the First Workshop on Embodied Conversational Characters (WECC '98), Lake Tahoe, California, (October 12-15, 1998).

[75] *Id.*

[76] Joseph C. Giarratano & Gary D. Riley, *Expert Systems: Principles and Programming* (4th Edition, PWS Publishing Company 2004).

interact with humans, facial expressions are key for communicating emotions in face-to-face conversation made simultaneously with speech. In current virtual avatar designs, most collaborative virtual environments force the user to explicitly set avatar emotions after they have entered text or voice input. However, some researchers are investigating a procedure based on an expert system that can be used to parse emotive expressions so that these emotions can be automatically displayed on the corresponding virtual avatars appearance.[77] In many online games, a user must input avatar body language and facial expressions via key presses which means it is almost impossible for users to chat and emote at the same time.[78] To appear realistic to a human, an avatar may have to react like humans do when communicating with each other, and facial expressions are a step in the direction of designing "human-like" avatars.[79]

Genetic algorithms[80] represent another technique to create "intelligent acting" avatars in virtual reality. Generally, genetic algorithms are search procedures that use the principles of natural selection and genetics to solve problems. Genetic algorithms use evolutionary techniques, based on optimization to develop a solution to a problem.[81] The basic operation of a genetic algorithm is straight-forward. First a population of possible solutions to a problem are developed, then the better solutions are recombined with each other to form some new solutions. Finally the new solutions are used to replace the poorer of the original solutions and the process is repeated. Many avatars are designed to display appropriate social behavior in reaction to other

[77] Michael Gerhard & David Moore, *User Embodiment in Educational CVEs: Towards Continuous Presence, available at* http://www.lmu.ac.uk/ies/conferences/Gerhard.html (last visited Nov. 1, 2005).
[78] Olveres et al., *supra* note 74.
[79] *Id*.
[80] Peter Small, *Magical A-Life Avatars: A New Paradigm for the Internet*, Manning Publications (November 1, 1998); Kenrick J. Mock, *Wildwood: The Evolution of L-System Plants for Virtual Environments, available at* http://www.math.uaa.alaska.edu/~afkjm/papers/Wildwood.doc (last visited June 1, 2005).
[81] Tom S. Ray, *Neural Networks, Genetic Algorithms and Artificial Life: Adaptive Computation*, in Proceedings of the 1994 ALife, Genetic Algorithm and Neural Networks Seminar 1, Institute of Systems, Control and Information Engineers (1994).

avatars and people in a virtual environment.[82] Genetic algorithms are useful for designing avatars which can display a range of social behaviors. The diversity of genetic customization is important in creating a unique avatar in a virtual world, and in being a part of a large, diverse community. To use a genetic algorithm to create various facial expressions, the design methodology of the avatar includes identifying variations in the parameters used in the computer code which control facial expressions, setting ranges for these parameters, and placing them into an array, which can be manipulated in a variety of ways.[83] The array is called the genotype; every unique avatar designed using genetic algorithms will have a different genotype. The gene ranges will provide an overall genetic space within which all possible avatars can exist. These genes will affect, for example, body shapes, colors, motions, facial proportions, and walking styles of an avatar.[84]

III. AVATARS AND WORKS OF AUTHORSHIP

Computers using methods in artificial intelligence have been programmed to compose music, write poetry, and write parts of a book, all areas deemed to reflect a high level of human creativity and copyrightable works of authorship. Once virtual avatars create works of authorship, especially if they do so independent from human input, traditional copyright notions of authorship and originality will need to be addressed.[85] This section addresses the question of whether the copyright law as currently enacted is able to adequately address issues of authorship

[82] Olveres et al., *supra* footnote 74.
[83] Craig Reynolds, *Flocks, Herds, and Schools: A Distributed Behavioral Model*, 21 Computer Graphics 25 (July, 1987).
[84] Jeffrey Ventrella, *Disney Meets Darwin - An Evolutionary-Based Interface for Exploration and Design of Expressive Animated Behavior,* MIT Master's Thesis (MIT Press 1994).
[85] *See* Samuelson, *supra* note 66, at 1199 (one of the main reasons why computers should not be held an author under the Copyright Act is that such entities do not need an incentive to create works of authorship). However, once a particular bar has been raised prohibiting authorship for intelligent entities, such as lack of incentive to create their works, that bar may be reached given the advances in artificial intelligence to create smart machines. It is interesting to note that since Samuelson's 1986 article, human chess grandmasters are regularly beaten by software and the field of electronic commerce is populated by intelligent software agents.

in a world of increasingly intelligent artificial entities. It may be the case that works created by intelligent avatars may be outside the ambit of federal copyright law, yet still in need of protection,[86] or that copyright may adequately account for works created by intelligent avatars.

Under the Copyright Act, the author of a work is the initial owner of the copyright in it, and may exploit the work herself or transfer some or all of the rights conferred by the copyright to others.[87] The author is generally the person who conceives of the copyrightable expression and fixes it or causes it to be fixed in a tangible form.[88] Given the decision of the Ninth Circuit in *MAI Systems Corp. v. Peak Computer, Inc.,*[89] holding that the loading of software into a computer's random access memory, created a copy within the meaning of the copyright act; an avatar who creates a work, fixes it at the moment of creation,[90] therefore the issue for the court to decide is whether the virtual avatar or another party "conceived" of the work. In this regard, an avatar's owner or programmer may be so far removed from the avatar's output, that they may not have any knowledge of the output or even recognize that it resulted, albeit indirectly, from their original input. Would such a person then be considered an author? If so, how would this decision serve the policy of encouraging authors to create?

"Works made for hire" are an important exception to the rule that the party who conceived of the idea is the author of a work, especially in the context of intelligent avatars: When a work is made for hire within the meaning of the Copyright Act, the employer or commissioning party, who pays for the creation of the work, is deemed the author, rather than

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[86] *See generally* Timothy L. Butler, *Can a Computer be an Author? Copyright Aspects of Artificial Intelligence,* 4 Hastings Commun. & Ent. L.J. 707 (1982).
[87] 17 U.S.C. § 201 (1976).
[88] *See generally*, Samuelson, *supra* note 66.
[89] *MAI Systems Corp. v. Peak Computer, Inc.,* 991 F.2d 511 (9th Cir. 1993).
[90] *Id.*

the employee who may actually have conceived of the work and fixed the expression.[91] One possible way to solve the problem of ownership of the intellectual property created by intelligent avatars is to always deem them as works for hire, in which case the employer or commissioning party would be the author. However, can an avatar serve as an employee working for an employer?[92] Could a programmer be considered an employer of an intelligent avatar? If yes, then why not assume that as an employee the intelligent avatar could have rights, either contractual or under the Copyright Act, to the intellectual property they created?[93]

Could the intellectual property created by avatars be considered a joint work between the avatar, programmer or avatars owner?[94] The Copyright Act defines a joint work as "a work prepared by two or more authors with the intention that their contributions be merged into separable or interdependent parts of a unitary whole."[95] The programmer's contribution to the joint work would be the algorithms to direct the avatar's behavior and the programming required to create the avatar's appearance;[96] the owners contribution would be the input directing the avatar's output; the avatar's contribution to a joint work would vary, from significant to less meaningful depending on the amount of input supplied by the programmer or owner. If using techniques such as neural nets or genetic algorithms, the avatar could make significant contributions to a joint work. For a joint work under the Copyright Act, the authors are

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[91] *See generally* Darin Glasser, *Copyrights on Computer-Generated Works: Whom, If Anyone, Do We Reward?* 2001 Duke L. & Tech. Rev. 0024 (2001).

[92] Currently, software may be licensed by one party to another to assist that party in many tasks that have traditionally been performed by humans, such as the production of documents and the manipulation of symbols and data.

[93] Even if an intelligent avatar was deemed an employee, one would then have to determine whether the work was a work for hire under the Copyright Act 17 U.S.C. §§ 101, 201. As with humans, could avatars "contract out" of their employee duties to an employer? Here it is interesting to note that "intelligent software agents" are contracting independently of humans in the domain of electronic commerce; *see* Dodd & Hernandez, *supra* note 26; *see generally* Kerr, *supra* note 41.

[94] *See generally* Tarcisio Queiroz Cerqueira, *Some Common and Civil Thoughts on Computer Generated Works available at* http://www.camera-e.net/-uploadCOMMON%20AND%20CIVIL%20THOUGHTS.pdf (last visited Nov. 3, 2005); *see generally* Samuelson, *supra* note 66.

[95] U.S.C. 17 § 101 (1976) (defining a "joint work"); *see also* Samuelson, *supra* note 66 at 1221.

[96] *But see, supra* note 39 (containing cites to self-learning systems).

considered co-owners of a single copy of the work. Thus, if a joint work was found, the programmer and avatar would each own an undivided interest in the copyright. But what if the avatar is learning within the virtual environment, and creates an output completely independent of the programmer's original effort; would the court then view the avatars output as an original work of authorship, or possibly as a derivative of the programmer's original input? If so, who would the court consider to be the author of the avatar's output; would the court deem the work original if created by an avatar and thus award a copyright to the avatar?

Under the Copyright Act, copyright subsists "in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced or otherwise communicated, either directly or with the aid of a machine or device."[97] For a work to be original, the author must have engaged in some intellectual endeavor of their own, and not just have copied from a preexisting source; and the work must exhibit a minimal amount of creativity.[98] In the context of avatars, important issues are whether an avatar can be considered to be an author, and if so, to determine whether the "works" of an avatar can be considered original. If avatars create original works of authorship eligible for copyright protection, who will the court determine to be the author of such works, the original programmer(s), the employer of the programmer, the avatar's owner, the avatar, or as discussed above will the work be considered a joint work under the copyright law with multiple owners?[99] The issue of whether computer-generated output can be eligible for copyright protection has received some attention in the past, with some commentators concluding that a computer can be

[97] 17 U.S.C. § 102(a) (1976).
[98] *Id.*
[99] *See* Samuelson, *supra* note 66; *see generally* Tal Vigderson, *Hamlet II: The Sequel? The Rights of Authors vs. Computer-Generated "Read-Alike" Works,* 28 Loy. L.A. L. Rev. 401 (1994) (discussing whether a romance novel written by an AI that was programmed to mimic author Jacqueline Susann might inappropriately copy Susann's style).

an author under the Copyright Act,[100] and some commentators reaching the alternative conclusion.[101]

The process of creating a work involving a virtual avatar involves the efforts of a programmer to create the avatar, the software used to create the avatar's appearance and behavior; and a computer to store the code used to design the avatar. The software can consist of rules that allow little or no autonomous actions by the avatar, or can consist of neural nets or genetic algorithms which allow the avatar to learn and act in significantly different ways than the original set of parameters used to design the avatar. In order to determine whether an avatar can be an author and receive copyright protections for its works, the interests of the programmer, employer, and avatar will need to be addressed. For example, it would be difficult to argue that an avatar with no ability to make decisions on its own, or perform in the capacity as an employee could be considered an author under § 101 of the Copyright Act.[102]

Giving authorship rights to an intelligent avatar will be difficult under the current copyright law.[103] One reason is enforceability of the rights granted under copyright; would an avatar be capable of enforcing such rights or have standing to initiate an action?[104] Further, awarding copyright to an avatar would imply that the avatar can have ideas that led to original works of authorship.[105] What separates avatars that act with a rudimentary level of intelligence[106]

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[100] *See generally* Karl F. Milde, Jr., *Can a Computer be an "Author" or an "Inventor?,"* 51 J. Pat. Off. Soc'y. 378 (1969).

[101] Arthur R. Miller, *Copyright Protection for Computer Programs, Databases, and Computer-Generated Works: Is Anything New Since CONTU?,* 106 Harv. L. Rev. 977 (1993) (concluding that AIs should not be authors because computers need no incentive to produce their output); *see* Samuelson, *supra* note 66 (arguing against copyright protection for artificially intelligent entities).

[102] The owner of the avatar might argue that the avatar is neither an independent contractor creating work on their own time or an employee working for the owner.

[103] *See* Samuelson, *supra* note 66; Milde, *supra* note 100.

[104] Rothblatt, *infra*, note 349; Regan, *infra*, note 330; s*ee generally* Evan H. Farr, *Copyrightability of Computer-Created Works,* 15 Rutgers Computer & Tech. L.J. 63, 65 (1989).

[105] *See* Butler, *supra* note 86, at 726-733.

[106] That is, avatars designed with genetic algorithms or neural nets which allow a rudimentary level of learning and autonomous behavior to occur. *See generally* Karnow, *supra* note 40.

from avatars which are designed to perform a limited set of actions strictly under human control, is the ability of the "smart avatar" to apply existing knowledge to a new set of facts or problems.[107] If an avatar is merely imitating human thought, and not actually creating an original work of authorship, then it may not qualify as an author under copyright law. The relevant inquiry is whether the avatars actions translate into the ability to create an original work rather than merely to reinterpret another author's work. This seems to be not only an issue of law but also one of public policy and philosophy.

The standard for what constitutes an original work under the Copyright Act has been decided by the U.S. Supreme Court.[108] Discussing the requirement for originality, the Supreme Court found that telephone white page listings did not satisfied the originality requirement because they lacked minimal creativity. The Court noted that the author's "selection and arrangement of the facts could not be so mechanical or routine as to require no creativity whatsoever."[109] As the Court discussed, "Original, as the term is used in copyright, means only that the work was independently created by the author, and that it possesses some minimal degree of creativity."[110] Under the Courts above analysis, the Court may determine that an avatar using algorithms is simply performing in a mechanical or routine manner; in which case the avatar would not be eligible to receive copyright protection for its work. However, what about an avatar with the capability to learn and respond to events in the virtual environment, in this case the problem solving would be far from mechanical or routine. Even so, before the court will award copyright protection to the output of an avatar, the work will have to be deemed original, which does not in itself seem to be an obstacle for an intelligent avatar. However, the avatar

[107] Bob Ryan, *AI's Identity Crisis*, BYTE 239, 240 (Jan. 1991).
[108] *Feist Publications, Inc. v. Rural Telephone Service Co., Inc.*, 499 U.S. 340 (1991).
[109] *Id.* at 362.
[110] *Id.* at 345.

would have to be deemed an author; this is the more difficult bar to overcome. Interestingly, there is some precedence that an "author" need not be a human being, under the work for hire doctrine a corporation may be deemed the author of a work[111] although this conclusion seems to conflict with case law presented next.

The courts analysis of whether a nonhuman can be an author has been addressed previously in a Ninth Circuit case.[112] This case involved a questionable claim that a superior being authored a particular work, but the analysis of the claim by the court offers an interesting insight into how the law might view authorship rights for intelligent avatars should the court be confronted with this issue. The case involved a copyright dispute between parties who believed the copyrighted work, the Urantia Book, was authored by celestial beings and transcribed, compiled and collected by "mere mortals."[113] The plaintiff, Urantia Foundation, claimed that Maaherra infringed the Foundation's copyright when she distributed a computerized version of the Urantia book on disk. Maaherra conceded copying, so the issue before the court was whether the Foundation owned a valid copyright in the book. Both parties believed that the words in the book were "authored" by non-human spiritual beings described in terms such as the Divine Counselor, the Chief of the Corps of Superuniverse Personalities, and the Chief of the Archangels of Nebadon.[114] These spiritual entities were claimed to have delivered the teachings that were eventually assembled in the Book, through a patient of a Chicago psychiatrist.[115]

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[111] For a discussion of the work for hire doctrine, *see* http://en.wikipedia.org/wiki/Works_for_hire (last visited Nov. 2, 2005); and U.S.C. 17 § 101 (1976); 17 U.S.C. § 201(b) (1976); *see also Scheer v. Universal Match Corp*., 417 F.2d 497, 502 (2nd Cir. 1969).
[112] *Urantia Foundation v. Maaherra*, 114 F.3d 955 (9th Cir. 1997).
[113] *Id.* at 956.
[114] *Id.* at 956.
[115] *Id.* at 956.

A threshold issue in this case was whether the work, because it was claimed to embody the words of celestial beings rather than human beings, was copyrightable at all.[116] In *Feist* the court in discussing a threshold requirement for copyright said, "To qualify for copyright protection, a work must be original to the author."[117] The core statute from the Copyright Act provides: "copyright protection subsists ... in original works of authorship fixed in any tangible medium of expression, ... from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device."[118] As the Court reasoned, "Original, as the term is used in copyright, means only that the work was independently created by the author (as opposed to copied from other works), and that it possesses at least some minimal degree of creativity."[119]

Maaherra claimed that there can be no valid copyright in the book because it lacked the requisite ingredient of human creativity, and that therefore the book was not a "work of authorship" within the meaning of the Copyright Act.[120] No where in the copyright laws, is there an express requirement for "human" authorship, and considerable controversy has arisen in recent years over the copyrightability of computer-generated works.[121] The *Urantia* court argued that the copyright law does not protect the "creations of divine beings", but that the copyright

[116] *Id.* at 958; *See also Oliver v. Saint Germain Foundation,* 41 F.Supp. 296 (S.D. Cal. 1941) (in *Oliver,* the plaintiff's religious text proclaimed that the facts contained in the text had come straight from a spirit, and that the spirit was the author of the history in the text. The plaintiff (unsuccessfully) claimed copyright protection in the divine revelations themselves, and in the methods of spiritual communication, rather than in the plaintiff's specific selection or arrangement of these divine revelations. The defendant in Oliver had not copied that arrangement and selection, but simply had written another text using the same divine "facts." *Id.* at 299. The court in Oliver made it clear that, had the claim been that the selection and arrangement of the divine revelations had been infringed, the plaintiff's copyright infringement claim might have had merit. *Id).*

[117] Feist, *supra* note 108, at 345.

[118] 17 U.S.C. § 102(a) (1976).

[119] Feist, *supra* note 108, at 345.

[120] Urantia, *supra* note 112, at 958.

[121] Samuelson, *supra* note 66, at 1197 ("While Congress may never have anticipated machine authorship, the statute itself says nothing about what kind of being one has to be in order to qualify as an author"); *see generally* Miller, *supra* note 101, at 1042-1072.

laws protect some element of human creativity.[122] The court stated "At the very least, for a worldly entity to be guilty of infringing a copyright, that entity must have copied something created by another worldly entity."[123]

For copyright purposes, the court reasoned, a work is copyrightable if copyrightability is claimed by the first human beings who compiled, selected, coordinated, and arranged the Urantia teachings, "in such a way that the resulting work as a whole constitutes an original work of authorship."[124] The court said that the party who was responsible for the creation of a tangible literary form that could be read by others, could claim copyright for themselves as "authors," since they were responsible for the religious revelations appearing " 'in such a way' as to render the work as a whole original."[125] Thus, notwithstanding the Urantia Book's claimed non-human origin, the papers in the form in which they were originally organized and compiled by the members of the Contact Commission were at least partially the product of human creativity.[126] The court reasoned that the papers did not belong to that "narrow category of works in which the creative spark is utterly lacking or so trivial as to be virtually nonexistent."[127] From the Ninth Circuit's analysis in *Urantia*, one can summarize the decision as calling for a human author to find a copyrightable work even if the author did not create the work. However, under § 201(b) of the copyright statute, a non-human entity such as a corporation, can be deemed the author of a work. This apparent conflict in the law will be even further stressed as artificial entities gain more intelligence, self-program, and make decisions independent from any human. Under the

[122] Urantia, *supra* note 112, at 958.
[123] *Id.* at 958.
[124] *Id*. at 958; *see also* 17 U.S.C. § 101 (1976) (defining a "compilation"); *see* 17 U.S.C. § 103 (1976) (providing that compilations are copyrightable). Under this logic, the user of the avatar would be deemed the author.
[125] Urantia, *supra* note 112, at 958.
[126] Feist, *supra* note 108, at 359; *See* Urantia, *supra* note 112, at 958.
[127] Urantia, *supra* note 112, at 958.

Copyright Act, could an avatar be registered as a corporation, and thus be deemed the author of a work for hire, such as the work of another avatar?

One obstacle to gaining copyright protection is determining whether the avatar is self aware that it created the work.[128] If the avatar is not self-aware of its actions, it can be argued that its output is merely a digital reinterpretation of what it has been programmed to do, thus not exhibiting any requisite level of creativity required for copyright protection. In this case the avatar's owner would be potentially liable for copyright infringement for the avatar's output.[129] In contrast, a human author who imitates the style of a famous author by reading her books and then writing in that style has committed no actionable infringement unless a significant amount of copying occurred. Could it be argued that a virtual avatar that is self-aware and producing creative works of authorship would conceivably be no different than a human author, and thus not producing an infringing work?[130]

One issue that has impacted the debate as to whether avatars should be an author and thus eligible for copyright protection is the lack of genuine human-like performance by avatars thus far.[131] However, recent advances in neural networks have led to works that are different in nature from how conventional computer-generated works are produced.[132] The human user of a neural network is even further removed from the authorship process and output of the neural network.[133] And, procedures used by neural nets itself mimics human brain processes which is relevant for the issue of whether the avatar is aware of their own creations. One commentator has argued that the issue of copyrighting neural network weights confronts the intelligent entity-

[128] *See generally* Barfield, *supra* note 35 (discussing personhood rights for intelligent entities).
[129] *See generally* Karnow, *supra* note 40, at 181-183.
[130] *See generally* Cerqueira, *supra* note 94.
[131] *See generally* Barfield, *supra* note 35.
[132] Donald L. Wenskay, *Neural Networks: A Prescription for Effective Protection*, 8 The Computer Lawyer 12 (1991).
[133] *See generally* Glasser, *supra* note 91.

authorship issue head-on.[134] On this topic, the Copyright Office has already registered a set of neural network weights.[135] And note that avatars themselves may be designed using neural networks which may change as the avatar learns, thus, one can wonder whether the output of the virtual avatar operating using a neural network would be eligible for copyright protection since the weights assigned to the neural networks can be registered.[136] That is, neural network architectures embodied in conventional software are copyrightable just as are other forms of software. Interconnection weights derived by training a neural network represent a new and valuable form of intellectual property and the court is typically inclined to protect economic rights.[137] Therefore, copyright law seems to offer one possible means in which to protect neural network weights.[138] And since avatars may be designed using neural networks, copyright can be put forward as a theory to protect the output of the intelligent virtual avatar itself.

In the area of creative writing, according to one commentator, "computer technology is advancing to the point where a computer may soon be able to generate works in the style of any author that it is programmed to duplicate."[139] In one example, a program was written to write in the style of best selling author Jacqueline Susann. The result was a published book, "Just This Once."[140] To create this work, the programmer used two of Ms. Susann's novels, "Valley of the Dolls"[141] and "Once Is Not Enough,"[142] to extract rules which represented the author's style.[143]

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[134] Wenskay, *supra* note 132.
[135] *Id*. at footnote 14 (discussing a Wall Street Journal article, October 4, 1990, at B5, on the copyright registration of a neural network).
[136] *Id.*
[137] *Id*.
[138] *Id*.
[139] Vigderson, *supra* note 99, at 402 (discussing whether a romance novel written by an AI that was programmed to mimic author Jacqueline Susann might inappropriately copy Susann's style).
[140] Scott French, *Just This Once* (Random House Value Publishing 1994) (French invested eight years and $50,000 to use artificial intelligence techniques to generate a novel in the style of Jacqueline Susann).
[141] Jacqueline Susann, *Valley of the Dolls* (Grove Press 1966).
[142] Jacqueline Susann, *Once Is Not Enough* (Grove Press 1973).
[143] John Boudreau, *A Romance Novel with Byte; Author Teams Up with Computer to Write Book in Steamy Style of Jacqueline Susann,* L.A. Times, Aug. 11, 1993, at E6.

The rules, numbering in the thousands were input into a computer to produce the tone and plot of the book.[144] It has been argued that current copyright law is not equipped to deal with the potential legal ramifications of such computer-generated works.[145] Copyright law protects the expression of an idea, but not the idea itself.[146] And protection extends to works fixed in a tangible medium of expression.[147] Protection does not extend to procedures, processes, systems, methods of operation, concepts, principles, or discoveries.[148] Once avatars gain intelligence, to make a claim for copyright protection, they must use more creativity in producing an output than a standard procedure or method. If writing style is characterized as a system or method of operation, then it is not protectable.[149] To determine if a writer's style can be protected, it must first be defined. In copyright terms, this is referred to as "dissection."[150] In order to duplicate the style of Jacqueline Susann, the programmer wrote thousands of computer-coded rules relating to how characters interacted, all based on Ms. Susann's works.[151]

Returning to the question of who should be the author of a work generated by an intelligent avatar, in the above example, the programmer admitted using Susann's style, reducing her style to thousands of rules equaling hundreds of thousands of lines of computer code.[152] Most human authors create works by improving on another's style.[153] However, as noted by one commentator, "when a computer is programmed to specifically imitate an author's style, the

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[144] Vigderson, *supra* note 99 (French identified 200 idiosyncrasies in Susann's writing. These idiosyncrasies related to language, character, and action. The rules French programmed were designed to teach the 200 idiosyncrasies to the computer).
[145] Glasser, *supra* note 91.
[146] 17 U.S.C. § 102(a), (b) (1976).
[147] 17 U.S.C. § 102(a) (1976).
[148] 17 U.S.C. § 102(b) (1976).
[149] *See generally* Vigderson, *supra* note 99.
[150] *See Computer Assocs. Int'l v. Altai, Inc.*, 982 F.2d 693 (2d Cir. 1992) (Altai enunciated the abstraction test from *Nichols v. Universal Pictures Corp.,* 45 F.2d 119 (2d Cir. 1930), cert. denied 282 U.S. 902 (1931) (upon any work a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out).
[151] Vigderson, *supra* note 99, at 405.
[152] *Id*. at 405.
[153] *Id.* at 406.

human interpretive element is removed."[154] If we assume an avatar with artificial intelligence has developed to the point where it can interpret an author's style in digital terms, basing new creations on the closed universe of an imitated author's works, then something worthy of protection has been appropriated.[155]

In discussing who should be the author of a work generated by an intelligent avatar, the issue of whether the avatar is creating a derivative work in copying the style of a human author must be considered. The Copyright Act[156] defines a derivative work as "a work based upon one or more preexisting works."[157] If "Just This Once," a computer-generated work, is viewed as a derivative work,[158] then it could be covered under an expansive interpretation of copyright law. If an author recognizes that his writing style is copied by the avatar but that significant amounts of the words have changes such that no case for direct copying can be made, then the author would have no cause of action for copyright infringement because under a traditional infringement analysis there would be no substantial similarity.

In terms of who should be an author, Nimmer defines authorship as "a *sine qua non* for any claim of copyright . . . the person claiming copyright must either himself be the author, or he must have succeeded to the rights of the author."[159] In terms of authorship for a derivative work, the Ninth Circuit expressed a narrow interpretation of a derivative work in *Litchfield v. Spielberg.*[160] In *Spielberg,* the plaintiffs argued that substantial similarity was not a requirement

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[154] *Id.* at 406. Perhaps the human interpretative elements can be found in the software?
[155] *Id* at 406.
[156] 17 U.S.C. § 103 (1976).
[157] 17 U.S.C. § 101 (1976).
[158] A "derivative work" is a work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which a work may be recast, transformed, or adapted. A work consisting of editorial revisions, annotations, elaborations, or other modifications which as a whole, represent an original work of authorship, is a "derivative work," 17 U.S.C. § 101 (1976).
[159] MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 5.01 [A], at 5-3 (1993).
[160] *Litchfield v. Spielberg***,** 736 F.2d 1352 (9th Cir. 1984), cert. denied 470 U.S. 1052 (1988).

to find that an infringing work was derivative. The *Spielberg* court soundly rejected this argument, stating that substantial similarity was necessary.[161] It seems reasonable that the "substantial similarity" standard could also be used to analyze the work of avatars.

IV. DESIGN AND USE OF VIRTUAL AVATARS

This section presents various intellectual property schemes that can be used to protect the rights of the virtual avatar's owner, and in some cases the potential rights of the intelligent avatar itself. As a basic principle, one needs to consider that an avatar is more than the graphical image that appears in a virtual environment; an avatar also includes the software and algorithms used to design the avatar. Under the Copyright Act, the visual image of the avatar appearing in the virtual environment can receive protection as a pictorial character.[162] However, characters may also be created with words, in which case they receive protection under the Copyright Act as a literary work.[163] Under the copyright statute, the protection of literary characters is normally distinguished from the protection of pictorial characters.[164] Due to the unique nature of avatars, existing in the form of software and in the form of an image appearing in a virtual environment, avatars may be eligible for dual protection as a pictorial character and as a literary character.

The less common way of thinking about copyright protection for avatars is as a literary character. Support for the argument that an avatar could be protected as a literary work is provided by the courts decision in *Universal City Studios v. Reimerdes*,[165] where the court ruled that code is eligible to receive First Amendment protection as speech. The court argued that code, whether source or object, is a means of expressing ideas, and thus "the First Amendment

[161] *Id.*
[162] 17 U.S.C. § 102 (a)(5) (1976).
[163] 17 U.S.C. § 102 (a)(1) (1976).
[164] *See generally Walt Disney Prod. v. Air Pirates*, 581 F.2d 751 (9th Cir. 1978).
[165] *Universal City Studios v. Reimerdes*, 111 F.Supp.2d 294 (S.D.N.Y. 2000).

must be considered before its dissemination may be prohibited or regulated."[166] If software is used to describe the visual appearance of an avatar, how it reacts in a virtual environment, even its possible range of speech, then the software may be protectable as speech under the First Amendment. Based on the court's decision in *Universal City Studios*,[167] one could argue that an avatar could receive protection under the Copyright Act as a literary character given that the code used to design the avatar could be protectable as speech. Also supporting this argument is that in cases involving cartoon, movie, or television characters, the Ninth Circuit has been willing to find copyright protection when the character at issue has a visual as well as personality described by word or character line.[168] Therefore, the more the avatar displays a unique character, the more likely the court will find the avatar to be more than idea, but expression and thus deserving of copyright protection.[169]

That code may be protected under the first Amendment as speech, has significance for the rights of avatars should they continue to get smarter. In the *Universal City Studios*[170] case, the court in deciding whether computer code is speech concluded that communications do not lose constitutional status as speech simply because they are expressed in the language of computer code.[171] This conclusion begs the question of whether the software used to design the avatar itself is protected under the First Amendment. Although the *Universal City Studios* case did not deal with the issue of whether the First Amendment right applied to virtual avatars, the

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[166] *See generally Junger v. Daley*, 209 F.3d 481, 485 (6th Cir. 2000); *Bernstein v. U.S. Dept. of State*, 922 F.Supp 1426, 1436 (N.D.Cal. 1996) (first Amendment extends to source code); *see Karn v. U.S. Dept. of State*, 925 F.Supp. 1, 10 (D.D.C. 1996) (assuming First Amendment protection extends to source code).
[167] University City Studios, *supra* note 165.
[168] *Gardner v. Nike, Inc*., 279 F.3d 774 (9th Cir. 2002.); *Wrench LLC v. Taco Bell Corp*., 256 F.3d 446 (6th Cir. 2001).
[169] *Seals-McClellan v. Dreamworks, Inc.,* 120 Fed.Appx. 3 (9th Cir. 2004); *Murray Hill Publications, Inc. v. Twentieth Century*, 361 F.3d 312 (6th Cir. 2004).
[170] Universal City Studios, *supra* note 165.
[171] *Id.* at 327.

case does provide insight as to what rights may someday be awarded intelligent avatars even suggesting that they may receive Constitutional rights.

The increased complexity of visual images has led one commentator to reach the conclusion that the situation existing in many courts has resulted in the convergence of distinct bodies of law, such as copyright, trademark and unfair competition, into a new body of law formulated solely to protect characters.[172] According to one commentator, the interplay of many factors has resulted in this convergence of the law.[173] These factors include: (1) the profits that can be made from the commercialization of characters, such as avatars who are able to take on a life of their own in settings that differ from those in which the avatar was originally designed to inhabit;[174] (2) the ability of avatars to function as entertainment products that are recognized under federal, state, and common law trademark law because they "suggest, if not clearly indicate, origin" of the products or services on which the avatar is associated with; and (3) the quality that an avatar through extended use, can lead to the public to relate to the character as being human.[175]

In the context of virtual avatars, it is important to remember that the copyrightable expression of a character is much more than just the character's physical appearance, and that it includes the specific name, physical appearance, and character traits of that character. In *Warner Bros. Inc. v. American Broadcasting Companies, Inc.*,[176] the court noted that in determining whether a character in a second work infringed a cartoon character, courts have generally considered not only the visual resemblance but also the totality of the characters' attributes and

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[172] Michael Todd Helfand, *When Mickey Mouse Is as Strong as Superman: The Convergence of Intellectual Property Laws to Protect Fictional Literary and Pictorial Characters*, 44 Stanford L. Rev. 623, 641 (1992).
[173] *Id.* at 628.
[174] *Id*. at 628; *see generally* Derral Fralish, Crystal Mario, Elaine Mitchell, Matthew Peterson & Lisa Smith*, Update on Virtual Reality: Avatars and 3D-Chat* (discussing how avatars may be used in advertisement and promotion), *available at* http://www.emory.edu/BUSINESS/et/avatar/ (last visited June 9, 2005).
[175] *See generally Helfand*, *supra* note 172, at 628.
[176] *Warner Bros., Inc. v. American Broadcasting Companies, Inc*, 720 F.2d 231, 241 (2nd Cir. 1983).

traits. A similar result was shown in *Detective Comics, Inc. v. Bruns Publications*[177] where the court found that the character "Superman" was infringed in a competing comic book publication featuring the character "Wonderman."[178] The court found that the infringing work "appropriated the pictorial and literary details embodied in" the copyrights protecting Superman.[179] To summarize the above court's decisions for virtual avatars, a copyright infringement action will involve more than just a showing of the physical similarity between two avatars; the court may also consider the range of behaviors exhibited by the avatar and even the avatar's digital speech.[180]

One of the more difficult problems of applying copyright law analysis and protection to virtual avatars will be to ascertain how such protection will be extended to protect a particular avatar once that avatar has taken on a life of its own and the avatar no longer exists in the original context in which it first appeared. The central question is whether copyright protection will be lost if the avatars appearance has changed. For virtual avatars designed using genetic algorithms, once they have genetically mutated their appearance and behavior will they still be eligible for copyright protection? In order to ascertain whether a virtual avatar might be entitled to copyright protection, the courts will likely follow the "character delineation" test which is used to analyze the copyrightability of graphical images.[181] Under this test, the critical issue in determining if such protection exists is whether the avatar is sufficiently and distinctively delineated so that it warrants protection.[182] Because copyright law does not protect ideas from infringement, but instead only protects the expression of those ideas, courts do not protect

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[177] *Detective Comics, Inc. v. Bruns Publications*, 111 F.2d. 432 (2nd Cir. 1940).
[178] *Id*. at 433-434.
[179] *Id.* at 433.
[180] *See generally* Midler, *infra note* 194.
[181] *Metro-Goldwyn-Mayer, Inc. v. American Honda Motor Co., Inc.,* 900 F.Supp. 1287 (C.D. Cal. 1995; *Anderson v. Stallone*, 1989 U.S. Dist. LEXIS 11109 (C.D. Cal. 1989).
[182] *See generally* Metro-Goldwyn, *id* at 1297-1301.

character types. Therefore, while a court would likely not extend copyright protection to a virtual avatar possessing super powers, the courts will likely extend copyright protection to a specifically delineated "super powered" avatar, without bestowing a monopoly on the mere character of a "super avatar." Based on this analysis, a good way to protect a virtual avatar under copyright law will be to ensure that the avatar's appearance and personality are specific and unique. Past characters that have received copyright protection have displayed consistent, widely identifiable traits.[183]

V. RIGHT OF PUBLICITY FOR AVATARS

What if the appearance of an avatar resembles that of a famous personality and is used for commercial gain in a virtual environment? If the avatar is copied and used for commercial purposes, the owner of the avatar may have a claim for damages under the right of publicity doctrine.[184] The right of publicity doctrine prevents the unauthorized commercial use of an individual's name, likeness, or other recognizable aspect of one's persona.[185] It gives an individual the exclusive right to license the use of their identity for commercial promotion. Thus far, the right of publicity doctrine has been used to protect humans but not the likeness of a nonhuman entity when exploited by another party for commercial gain; e.g., in *White v. Samsung Electronics America, Inc*.,[186] a non-human entity was found to be a sufficient likeness to Vanna White to support a right of publicity claim. The court's reasoning in *White* begs the question- Could it be possible that the right of publicity doctrine could be expanded to protect an avatar should the avatar gain in intelligence and contribute to its own physical and personality identity?

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[183] *See, e.g*., *Toho Co., Ltd. v. William Morrow and Co., Inc.*, 33 F.Supp.2d 1206, 1215 (C.D.Cal. 1998) (Godzilla); *Metro-Goldwyn-Mayer, supra* note 181, at 1297 (James Bond); Anderson*, supra* note 181 (Rocky Balboa).

[184] *Winter v. DC Comics*, 69 P.3d 473 (Cal. Sup. Ct. 2003); *Eastwood v. Superior Court*, 149 Cal.App.3d 409 (1983).

[185] *Toney v. L'Oreal USA, Inc*., 406 F.3d 905 (7th Cir. 2005).

[186] *White v. Samsung Electronics America, Inc.,* 971 F.2d 1395 (9th Cir. 1992).

In the United States, the right of publicity is largely protected by state common or statutory law.[187] Of the states that recognize a right of publicity, many do not recognize a right by that name but protect it as part of the right of privacy.[188] The Restatement (Second) of Torts recognizes four types of invasions of privacy: intrusion, appropriation of name or likeness, unreasonable publicity and false light.[189] Under the Restatement's formulation, the invasion of the right of publicity is most similar to the unauthorized appropriation of one's name or likeness.[190] In other states the right of publicity is protected through the law of unfair competition. Actions for the tort of misappropriation or for a wrongful attempt to "pass off" the product as endorsed or produced by the individual help to protect the right of publicity. The Federal Lanham Act can also provide protection where a person's identity is used to falsely advertise a product or designate its origin.[191]

The case law provides some insight on how the court may view right of publicity claims brought by intelligent avatars or the owners of avatars. In *White*,[192] Vanna White sued Samsung for creating an ad that included a robot in a blond wig and fancy dress standing on a game show set similar to the set used on the television show "Wheel of Fortune." The Ninth Circuit rejected a parody defense asserted by Samsung because the ad's spoof of Vanna White was secondary to the ad's main purpose: to sell Samsung VCR's.[193] So, under the *White* decision, would an infringing party have to copy the exact replica of an avatar to be actionable under a right of publicity claim? The court's decision seems to imply that the answer is no, an avatar that is not an exact replica of another avatar could be actionable given that the other elements of a right or

[187] *See* California's Right of Publicity Statute, Cal.Civ. Code § 3344.
[188] *See generally Legal Information Institute available at* http://www.law.cornell.edu/topics/publicity.html (last visited Nov. 1, 2005).
[189] *See* Restatement (Second) of Torts § 652 (1976).
[190] *See* Restatement (Second) of Torts § 652C, comments a & b (1976).
[191] *See* § 1125 Lanham Act, 15 U.S.C. (2000).
[192] White, *supra* note 186.
[193] *Id.* at 1401-1402.

publicity claim were met. The courts decision also implies that an avatar could be found to have violated a human's right of publicity.

Another case with relevance for virtual avatars involved a voice sound-alike. In *Midler v. Ford Motor Co.*,[194] the Ninth Circuit found that a sound-alike of the actress and singer Bette Midler used in a commercial was a violation of Midler's right of publicity; this decision has relevance for digital speech that could be produced by an avatar. To avoid a right of publicity claim, the avatar should not be designed to copy the voice of a famous person (although this is technically possible). Further, could the court find a right of publicity violation if an avatars voice was copied, that is, if the avatar had gained celebrity status in a virtual environment and the copied voice was used for commercial gain? A major issue for such a claim would be whether the avatar's recognized voice had commercial value. In *Pesina v. Midway Manufacturing Company*,[195] the plaintiff brought an action against a video game manufacturer challenging use of his image on the home version of Mortal Kombat and Mortal Kombat II (he had been hired to model for characters of the arcade version). The defendant's motion for summary judgment was granted and the court held that the alleged use of martial artist's name, likeness, or persona did not violate his common law right of publicity because there was no evidence that prior to his association with the game, his name, likeness or persona had commercial value.[196] Also, there was no evidence that his likeness was recognizable by the games' users. Therefore, under a right of publicity theory, avatars that lack celebrity status leading to commercial value, may not receive protection if copied.[197]

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[194] *Midler v. Ford Motor Co*., 849 F.2d 460 (9th Cir. 1988)
[195] *Pesina v. Midway Manufacturing Company*, 948 F. Supp. 40 (N.D. Ill. 1996).
[196] *Id*.
[197] But some avatars have already gained notoriety, *see e.g.,* John Alderman, Wired News, *From Earth to Avatars* (discussing an avatar beauty contest) *available at* http://wired-vig.wired.com/news/culture/0,1284,16439-2,00.html (last visited Nov. 11, 2005); *See generally* Sean Egen, *The History of Avatars, available at*

VI. AVATAR PROTECTION UNDER TRADEMARK AND UNFAIR COMPETITION LAW

Another avenue for the protection of the rights of the owner of the virtual avatar is to protect the avatar under trademark and unfair competition law. Federal, state and common law protection will protect the avatar from being used by another party without authorization when the avatar functions as a form of identification and is recognized by the public as paired to a product. This protection could prevent the exact duplication of the trademark owner's avatar or the imitation of that avatar where the likely result would be to cause public confusion, mistake or deception with regard to source of the products or services that carry the likeness of the avatar.[198] Trademark law will not permit a graphic character to be trademarked solely for its own protection; however, it does permit the character's name and likeness to be trademarked when the function of that trademark is to indicate the source of the products and services bearing that mark.[199] Here again, the court seems to suggest that avatars that are unique and have their own look and feel, may be protected.

As may be expected, there will be advantages and disadvantages to protecting an avatar as a trademark. On the positive side, to obtain a trademark, the avatar will not have to include the originality attributes that are required under copyright law.[200] In addition, in order to prove trademark infringement the trademark owner will not need to prove that the infringer had access to the avatar as is required under copyright law,[201] but only that the mark was used by a party other than the owner of the mark without permission. Finally, the longer term of protection,

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http://www.oddcast.com/home/news/2005/06202005-3.html (last visited Nov. 2, 2005). There could also be other causes of action directed against the infringer by the owner of the avatar.

[198] *See generally Kellogg Co. v. Exxon Corp*., 209 F.3d 562 (6th Cir. 2000).

[199] *Two Pesos, Inc. v. Taco Cabana, Inc*., 505 U.S. 763 (1992).

[200] The originality requirement for copyright is expressed in Feist, *supra* note 108; 17 U.S.C. § 101; and U.S. Const. art. I, § 8, cl. 8.

[201] *See generally* U.S. Copyright Office, *Copyright Basics (Circular* 1), *available at* http://www.copyright.gov/circs/circ1.html (last visited Oct. 25, 2005).

potentially perpetual just as long as the registration requirements are fulfilled, the mark is not abandoned, or the mark loses its status as a trademark, especially for successful and highly marketable graphic characters, such as many of the Disney and Warner Brothers characters, can be valuable and profitable.[202] However, on the negative side, federal trademark protection for an avatar may be costly.[203] This will be especially true if the avatar is extensively used or licensed for use in multiple media formats and in merchandising programs for many different categories of products and/or services. In addition, because trademark protection is territorial, the avatar serving as a mark[204] may need to be registered in countries other than just the United States to provide the maximum degree of protection as possible.[205] Since, neural nets and genetic algorithms allow an avatar to learn and change their appearance, and any changes in the appearance of the avatar could destroy the original trademark protection, additional trademark registrations may be necessary to ensure that the current appearance of the avatar remains protected.

Another legal theory which may be used to protect an avatar is unfair competition law.[206] Unfair competition laws involve a variety of different causes of action that primarily fall into three categories: (1) misrepresentation,[207] (2) sponsorship,[208] and (3) misappropriation.[209]

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[202] Lloyd L. Rich, *Protection of Fictional Characters*, *available at* http://www.publaw.com/fiction.html (last visited Oct. 26, 2005).
[203] *Id*.
[204] If an avatar gains in intelligence, could it then serve as a trademark? The subject matter of trademark covers "any word, name, symbol, or device," 15 U.S.C. § 1127 (2000). Would an avatar that produces its own output be either a symbol or device? It seems that an avatar that gained legal rights would not be appropriate the subject matter covered by trademark law.
[205] *See e.g.,* Nisha Vosa, USINFO.STATE.GOV, *International Policy and Accords,* discusses treaties related to international intellectual property rights, *available at* http://usinfo.state.gov/products/pubs/intelprp/accords.htm, (last visited Nov. 8, 2005).
[206] *Nike, Inc. v. Kasky***,** 539 U.S. 654 (2003).
[207] Mary LaFrance, *When You Wish Upon a Dastar: Creative Provenance and the Lanham Act,* 23 Cardozo Arts & Ent. L.J. 197 (2005).
[208] Joseph R. Dreitler, *The Tiger Woods Case – Has the Sixth Circuit Abandoned Trademark Law, ETW Corp. v. Jireh Publishing, Inc.*, 38 Akron L. Rev. 337 (2005).

Misrepresentation occurs when a party represents that a particular character is associated with their product or service, when, in reality, it is not. Sponsorship occurs when a party indicates that a particular character has endorsed its product or service when it has not. Misappropriation, which may be most relevant for the protection of avatars, may occur when a party steals another's avatar in order to associate it with their product or *service*.[210] Therefore, when one brings an unfair competition action, the injured party is claiming that their character has been wrongly associated with another party's product, service, person, company, or idea.[211] If such misuse of a graphic character occurs and it is determined under the reasonable person standard[212] that the graphic character had been misrepresented, used falsely as a sponsor, or misappropriated then the party engaged in such misuse could be found liable for trademark infringement.[213] Most courts have recognized trademark protection for graphic characters and have found trademark infringement liability under both trademark and unfair competition law.[214] Therefore, if avatars are used for commercial purposes, in addition to copyright protection, other claims to protect avatars can be brought, including right of publicity and trademark or unfair competition. An example of case law in this area is *Walt Disney Productions v. Air Pirates*,[215] where the court appeared to commingle copyright and trademark law infringement criteria by stating that the Disney characters used by the defendants had "achieved a high degree of 'recognition' and

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[209] Peter S. Menell, *Regulating "Spyware": The Limitation of State "Laboratories" and the Case for Federal Preemption of State Unfair Competition Laws,* 20 Berkeley Tech. L.J. 1363 (2005).
[210] An example of a real world case dealing with images, is Kellogg*, supra* note 198.
[211] *Mitsubishi Motors Corp. v. Soler Chrysler-Plymouth, Inc.*, 473 U.S. 614 (1985).
[212] *See generally* Joseph Gibbons Llewellyn, *Semiotics of the Scandalous and the Immoral and the Disparaging: Section 2(A) Trademark Law After Lawrence v. Texas*, 9 Marq. Intell. Prop. L. Rev. 187 (2005).
[213] *See generally Freeman v. Time, Inc*., 68 F.3d 285, 289 (9th Cir. 1995).
[214] *Fisher v. Star Co*., 132 N.E. 133 (1921), *cert. denied*, 257 U.S. 654 (1921) (the cartoon characters Mutt and Jeff were protected by the court under trademark and unfair competition principles which found the Star Company liable for their unauthorized use of the characters).
[215] Walt Disney Productions, *supra* note 164.

'identification'" and that these elements helped make the characters protectable under copyright law.[216]

VII. TECHNIQUES TO MANIPULATE THE VISUAL APPEARANCE OF THE AVATAR

There are various ways that a digital image can be altered which raises the question of whether such alternations if made to a virtual avatar can be actionable. Some of the commonly used techniques to alter the original design and appearance of an image include colorization, letterboxing, panning and scanning, lexiconning, morphing, deletion of material, and the digital replacement of the full image or some aspect of the image.[217]

COLORIZATION

One particular technique, colorization, has been used extensively to add color to black and white film, but the general technique of altering the color characteristics of an image could just as well be used to alter the color of avatars and simulated places in virtual environments. Colorization, in the context of film, is a process that matches colors with the grey-scale[218] of the black-and-white original image and then alters the image frame by frame.[219] How the technique works is that an art director chooses a "key" frame and selects the colors for each part of that frame. This key frame is used as a standard for all the other frames in a particular scene.[220] The film's "palette" is thus re-created and a computer electronically overlays the new color scheme

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[216] Helfand, *supra* note 172, at 643-645.
[217] Janine V. McNally, *Congressional Limits on Technological Alterations to Film: The Public Interest and the Artists' Moral Right,* 5 High Tech. L.J. 129, 132-133 (1990).
[218] Dan Renberg, *The Money of Color: Film Colorization and the 100th Congress*, 11 Hastings Commun. & Ent. L.J. 391, 394 (1989).
[219] McNally, *supra* note 217, at 132-133; *see also* James Thomas Duggan & Neil V. Pennella, *The Case for Copyrights in Colorized Versions of Public Domain Feature Films,* 34 J. Copy. Socy 333, 336 (1987) (the colors in a black-and-white film are represented by blacks, whites, and greys. A computer scans a videotape of the black-and-white film and determines what true colors should be used to replace the grey-scale tones).
[220] McNally, *supra* note 217, at 133.

onto a videotape copy of the film.[221] With digital imagery, the color characteristics of avatars can also be changed with standard paint packages. The major colorization companies use similar techniques when converting black-and-white films into color films. To colorize an image, the colorist may assign one of over approximately 50,000 hues to each of the pixels that comprise the given frame to accomplish that goal.[222] Once the frame has been colorized, the computer monitors each object as it moves from frame to frame until the scene changes.[223] At the change of the scene, the process is then repeated.

In the context of colorization techniques, a first question to raise is whether the colorization of an avatar or virtual environment scene would be sufficiently original as to satisfy the Copyrights Acts originality requirement?[224] In *Feist*,[225] the Supreme Court held that the Intellectual Property clause of the United States Constitution[226] requires that a work be "original" to receive copyright protection. If read broadly, *Feist* withholds copyright protection from certain works that society has a clear interest in seeing created but do not possess a sufficient amount of originality. In particular, *Feist* may leave some colorized films[227] without copyright protection and this conclusion may also apply to colorization of avatars and virtual environments in general.

The ability to colorize old black-and-white films has generated considerable controversy.[228] And colorization of film is not that far removed from virtual environments as the

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[221] Anne Marie Cook, *The Colorization of Black and White Films: An Example of the Lack of Substantive Protection for Art in the United States,* 63 Notre Dame L. Rev. 309, 323 (1988).
[222] David J. Kohs*, Paint Your Wagon--Please!: Colorization, Copyright, and the Search for Moral Rights*, 40 Fed.Comm. L.J. 1, 4 (1988).
[223] *Id.* at 4.
[224] 17 U.S.C. § 102 (a) (1976).
[225] Feist, *supra* note 108.
[226] U.S. Const. art. I, § 8, cl. 8.
[227] Specifically, Feist may affect colorized versions of black and white films in the public domain.
[228] Michael C. Penn, *Colorization of Films: Painting a Moustache on the "Mona Lisa"*? 58 U. Cin. L. Rev. 1023 (1990); *Otto Preminger Films, Ltd. v. Ouintex Entertainment, Inc.* (In re Quintex Entertainment Inc.), 950 F.2d 1492 (9th Cir. 1991).

avatars in virtual environments can serve as actors in digital moves shown in virtual reality.[229] Persons who oppose colorization have included film directors, screenwriters, and avid black-and-white film fans. Opponents of colorization believe that colorization will ruin the original filmmaker's intent as captured on black-and-white film.[230] And using similar reasoning, changing the color of an avatar or virtual environment may receive opposition from the virtual world designers and users. Proponents of the new technology include colorization firms and film copyright owners, who have invested millions of dollars in this market, with the hope of generating large revenues from sales of colorized films in the television syndication and home video markets.[231] Under current law, an original filmmaker may prevent colorization if he is the copyright owner.[232] However, once the filmmaker transfers his proprietary interests in the copyright, the original filmmaker no longer retains control over the future disposition of the film.[233] This basic finding would also apply to virtual avatars.

Generally, directors and screenwriters are employed on a work-for-hire basis.[234] Section 201 of the Copyright Act provides that the copyright vests initially in the author of the work, but that in the case of a work-for-hire, the employer is considered the author.[235] As such, the employer owns the copyright to the film unless the creative author signs a written agreement to the contrary.[236] If an avatar obtained work-for-hire status, without a contract to the contrary, the avatar's employer would have ownership rights as enumerated under the Copyright Act. For

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[229] Carlton Reeve, *Presence in Virtual Theatre*, *available at* http://www.eimc.brad.ac.uk/research/presence.html (last visited Nov. 2, 2005); *see also Televirtual available at* http://www.televirtual.com/ (last visited June 9, 2005).
[230] *See generally* Elise K. Bader, *A Film of a Different Color: Copyright and the Colorization of Black and White Films*, 5 Cardozo Arts & Ent. L.J. 497, 498 (1986).
[231] *Id.* at 498.
[232] *Id.* at 499.
[233] *Id.* at 499.
[234] Cook, *supra* note 221, at 325.
[235] Edmund W. Kitch & Harvey S. Perlman, *Legal Regulation of the Competitive Process: Case Materials, and Notes on Unfair Business Practices, Trademarks, Copyrights, and Patents,* 508 (3rd edition, The Foundation Press 1986). Under the Copyright Act a work made for hire is defined to include a work prepared by an employee within the scope of his employment, 17 U.S.C. § 101 (1976).
[236] Kitch & Perlman, *id*, at 508.

example, in the context of film, the copyright allows its owner to prevent the unauthorized duplication of an original film as well as the unauthorized creation of a derivative version of the same film.[237] A derivative work is one that is substantially copied from a prior work.[238] Because the colorized version of a film is substantially copied from the original black-and-white version, it is considered to be a derivative of the original film. Therefore, the owner of the copyright to a black-and-white film may preclude the conversion of the film into color for the term of the copyright.[239] A creative author, either one who is hired on a work-for-hire basis or one who originally owned the copyright and subsequently assigned his copyright to another, can contract to prevent the copyright owner from altering his work.[240] If the author does so, the copyright owner would be precluded from colorizing the film for the duration of the copyright.[241] However, once the work enters the public domain, any person would be free to colorize the film. As long as courts narrowly construe the *Feist*[242] decision, colorized films should continue to receive copyright protection.[243] For those artists who base their selection of colors on personal taste or reasons other than factual accuracy, colorized films should be able to demonstrate the requisite level of originality; the same reasoning should also hold for the colorization of avatars and virtual environments. Further, given that software agents may form contracts in cyberspace, a future court may be asked to determine whether an avatar would be able to contract to prevent colorization or any other manipulation of the attributes of the avatar.

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[237] *Id*.
[238] MELVILE NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 3.01, at 3-2 (1987) (a derivative work is non-infringing if it is created pursuant to the consent of the copyright owner of the underlying work or if it is based on a work in the public domain).
[239] *See generally* Kohs, *supra* note 222, at 21.
[240] *Schoenberg v. Shapolsky Publishers*, 971 F.2d 926 (2nd Cir. 1992).
[241] *See generally* Raphael Winick, *Intellectual Property, Defamation and the Digital Alteration of Visual Images*, 21 Colum. VLA J. L. & Arts 143 (1997).
[242] Feist, *supra* note 108.
[243] Many commentators believe that Feist was intended to check the expansion of copyright to include numerical paging or alphabetical order. As such, it is not improper to construe Feist narrowly

LETTERBOXING

This section summarizes a few additional techniques which can be used to alter the appearance of an avatar or virtual environment. Letterboxing is the process by which a film retains its original aspect ratio when it is viewed on television.[244] A dark band appears along the top and bottom of the screen, but with letterboxing the full movie theater image can be seen on a home television without any appreciable cropping of the original picture.[245] Panning and scanning are other techniques where the central characters in a scene are followed by a scanner which assures that those characters will appear in the middle of the screen and will not be cropped when the film is shown on television.[246] These techniques are similar to the concept of "zoom" in film, which in the design of virtual avatars corresponds to moving the virtual camera eye in relation to the computer graphics viewport.[247] Panning is used as somewhat of a substitute for letterboxing.[248] Finally, lexiconning alters the speed of a film, which can affect the total running time as much as six to seven percent. These changes are not very noticeable to the naked eye; but in the context of virtual avatars, adding more objects such as avatars in a virtual environment has the effect of increasing the polygon count in the scene, and may slow down the simulation. However, unlike the five to seven percent decrease in running time for film, increased polygon complexity can significantly slow down the speed of the virtual environment simulation, with noticeable lag in movements within the virtual environment. If not monitored properly, lexiconning may extend beyond the acceptable level and affect the overall aesthetic

[244] The Academy of Motion Pictures Arts and Sciences has set a projection standard for feature films of 1.85:1 where the image is 1.85 times as wide as it is high. Certain films with a more "panoramic" look may utilize aspect ratios as high as 2.35:1. In contrast, the National Television System Committee standard is 1.33:1.
[245] McNally, *supra* note 217, at 133.
[246] *Id.* at 133-134.
[247] The effect on the image is either a magnification or minification which could greatly change the appearance of the virtual environment.
[248] McNally, *supra* note 217, at 134.

composition of the film.[249] Causes of action for altering an image could potentially be under contract law or the moral rights doctrine[250] as expressed in the Copyright Act, and the Berne convention.[251]

ADDITION AND DELETION OF MATERIAL

Deletion of material from a film occurs under several circumstances such as when film portions are edited or removed to allow for censorship requirements or television commercials. For instance, a film that is two hours in length will not fit into a two hour television time slot and provide time for commercials; thus, the film must be edited. Further, the computer generation of images may involve the insertion of people or objects into existing videotapes or films. This technique has been used to add famous personalities to older films.[252] In *Preminger v. Columbia Pictures Corp*.,[253] a New York court held that when a filmmaker grants the television rights to his work to another party he implicitly grants the rights to cut and edit the film.[254] This finding has implications for avatars which can easily be transported into other media formats using the internet and edited using commercially available software packages. Director and producer Otto Preminger complained that his film, "Anatomy of a Murder," was to be shown on television with several portions of the film edited out. The studio that owned the copyright to the film sold the rights to Columbia Studios, who had an agreement with its licensee television stations allowing

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[249] *Id*. at 134.
[250] 17 U.S.C. Sec. 106A (1990) (describing rights of certain authors to attribution and integrity). However, see the discussion forthcoming; if virtual avatars are viewed as film, then they will not receive protection under the Visual Rights Artists Act.
[251] *Berne Convention for the Protection of Literary and Artistic Works, Article 6bis, moral rights*, *available at* http://www.law.cornell.edu/treaties/berne/6bis.html (last visited Oct. 25, 2005).
[252] *See generally Virtual Product Placement*, *available at* http://www.ad-mkt-review.com/public_html/air/ai20008.html; *see generally* Lauri Deyhimy, *Why Seeing is No Longer Believing: Misappropriation of Image and Speech,* 19 Loy. L.A. Ent. L. J. 51 (1998). In recent years television commercials for Diet Coke have digitally inserted current celebrities into classic films pairing them with deceased actors, *see* Stuart Elliot, *New Spots are Set for Diet Coke, Pepsi*, N.Y. Times, July 24, 1992, at D4.
[253] *Preminger v. Columbia Pictures Corp*, 267 N.Y.S.2d 594 (Sup. Ct. N.Y. 1966).
[254] *Id*. at 599.

the stations to cut portions of the film for commercials.[255] Preminger sought an injunction to prevent this editing but the court denied his request.[256] The court, however, held that should the level of cutting and editing become so great as to become "mutilation" of the film, then Preminger may have a proper cause of action.[257] Thus, a director, without express contract reservations, cannot prevent minor editing of a work when it is to be shown on television.[258] Would the court apply the same standard to virtual avatars, and if so, how much "mutilation" would have to occur for an injunction to be issued?

A more drastic example of deletion of material occurred in *Gilliam v. American Broadcasting Co*.[259] *Gilliam* involved the British comedy group, "Monty Python," and a U.S. broadcast of special presentations of Python's half-hour series "Monty Python's Flying Circus."[260] The court found that the American Broadcasting Company (ABC), successor to the broadcast rights from the British Broadcasting Corporation (BBC), had grossly altered the program by deleting approximately 27 percent of the material.[261] The court further held that ABC had "impaired the integrity of appellants' work and represented to the public as the product of appellants what was actually a mere caricature of their talents."[262]

Monty Python based its cause of action on the moral rights doctrine; but the court, while finding in favor of Monty Python, did not adopt a moral rights approach.[263] Rather, the court

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[255] *Id*. at 600.
[256] The court held that "the right to interrupt the exhibition of a motion picture on television for commercial announcements and to make minor deletions to accommodate time segment requirements or to excise those portions which might be deemed, for various reasons, objectionable, has consistently been considered a normal and essential part of the exhibition of motion pictures on television." *Id.* at 599-600.
[257] *Id*. at 603.
[258] Gail H. Cline, *On a ClearPlay, You Can See Whatever: Copyright and Trademark Issues Arising from Unauthorized Film Editi*ng, 27 Hastings Commun. & Ent. L. J. 567 (2005).
[259] *Gilliam v. American Broadcasting Co*., 538 F.2d 14 (2nd Cir. 1976).
[260] *Id*.
[261] *Id.* at 19.
[262] *Id*. at 25.
[263] *Id*.

granted relief founded in the economic rights of the author.[264] The court premised this approach on section 43(a) of the Lanham Act.[265] The *Gilliam* court found that since alterations to the program represented a different product than the original, potential Monty Python fans might be driven away.[266] The edited program represented something that was markedly different from the original, yet ABC continued to project the work as that of Monty Python.[267] This resulted in unfair competition and economic injury, thus allowing the application of the Lanham Act.[268] In an age of digital avatars consisting of bits, movies with virtual actors, and the commercialization of virtual reality, the potential that an image will be pirated and altered is great. This should lead to increased disputes and litigation in the future with a cause of action based on the Lanham Act.

MORPHING OF IMAGES

Morphing is a term used in computer graphics that represents a technique that allows one image to be gradually changed into another.[269] A morphed image is generated by creating intermediate images that represent "interpolations" between the start and end image.[270] One key question to ask should virtual avatars gain in intelligence, is whether they would have any legal rights such as to seek an injunction should one want to morph a particular avatar without consent

[264] American copyright law, as presently written, does not recognize strong moral rights or provide a cause of action for their violation, since the law seeks to vindicate the economic, rather than the personal, rights of authors. *Id*. at 24.

[265] 15 U.S.C. § 1125(a) (2000), The statute provides in part: "Any person who, on or in connection with any goods or services, ... uses in commerce any word, term, name, symbol, or device, or any combination thereof, or any false designation of origin, false or misleading description of fact, or false or misleading representation of fact ... shall be liable in a civil action by any person who believes that he or she is or is likely to be damaged by such act".

[266] Gilliam, *supra* note 259, at 24.

[267] *Id* at 24.

[268] *Id* at 24.

[269] Examples of software packages for morphing are *available at* http://graphicssoft.about.com/od/morphing/ (last visited Nov. 3, 2005).

[270] Generally speaking, based on how to establish the correspondence between the two images, morphing techniques can be classified into two groups, landmark-based approaches and image-based approaches. The first techniques require pairs of points or line segments, which are referred to as landmarks and normally specified manually while the second techniques use features given by the images alone such as pixel intensities to establish the morphing.

(which would be the equivalent of forced digital plastic surgery).[271] In the area of virtual pornography, an interesting set of cases with relevance to virtual avatars have been litigated.

In 1996, Congress, in its effort to stem the flow of child pornography, passed the Child Pornography Prevention Act (CPPA) of 1996.[272] Section 2256(8)(A) of the CPPA covers the use of actual underage "real" children.[273] Section 2256(8)(C), prohibits "morphing" or the changing of images of actual children to make them appear as though they are engaging in acts which, in actuality, they are not.[274] In *Free Speech Coalition v. Reno*,[275] the constitutionality of section 2256(8)(B) of the CPPA, which prohibits any visual depiction, including any film, video, picture, or computer or computer-generated image or picture that "is, or appears to be" of a minor engaging in sexually explicit conduct was disputed.[276] The "appears to be" aspect of the statute has great significance for the rights of virtual avatars.

The literal language of the CPPA would prevent activities that did not involve the use of real children. One example is "virtual child pornography," or images that were completely computer-generated that "appear" to be minors engaging in sexually explicit conduct. In *Free Speech Coalition v. Reno*,[277] the court described that in "morphing," the "picture of a real person is transformed into a picture of a child engaging in sexually explicit activity." Although the computer-generated image looks real, the children depicted in the image do not actually exist;[278] the picture is therefore 100 per cent virtual. Because the definitions in subsections (B) and (D) of the CPPA could be applied to situations where no actual child could be harmed by the production

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[271] *See generally* Barfield, *supra* note 35.
[272] *Child Pornography and Prevention Act*, 18 U.S.C. §§ 2241, 2251-2252A, 2256 (2000).
[273] *Id.*
[274] *Id.*
[275] *Free Speech Coalition v. Reno***,** 198 F.3d 1083 (9th Cir. 1999); *Ashcroft v. Free Speech Coalition*, 535 U.S. 234 (2002).
[276] Reno, *id.* at 1089.
[277] *See generally id.* at 1091.
[278] *Id.*

or distribution of the image, the High Court struck them down in Ashcroft.[279] One aspect of this finding is that intelligent avatars will have no right to bring an action under the CPPA if they do not portray the image of a "real" human minor; which is not possible given that they exist as a virtual image. And further, since an avatar is not a legal person at all, any pornographer would be free to morph their image[280] without violating the CPPA. This may bring up the interesting issue of whether under the law, an avatar can be considered a person, and if so would the avatar always be considered to be a legal adult.

Another case with relevance for virtual avatars and morphing is *Greenberg v. National Geographic Soc*.[281] This case involved a freelance photographer who brought an infringement suit against National Geographic. National Geographic published a searchable electronic collection of its prior issues, including those in which the photographer's copyrighted pictures had appeared.[282] The Court of Appeals held that the use of copyrighted cover photograph to create a morphing video montage infringed the photographer's exclusive rights to prepare derivative works.[283] Further, a magazine publisher's use of copyrighted cover photographs to create a morphing video montage included in an electronic compilation of prior issues was not fair use; as the photographs were transformed, and thus became part of larger, new collective work.[284] Note that in order to qualify as a derivative work, the resulting work (including "revisions") after transformation must qualify as an "original work of authorship."

As noted, the court found that with respect to the montage and its unauthorized use of Greenberg's copyrightable photograph, that "the Society had infringed upon the photographer's

[279] Ashcroft, *supra* note 275, at 242.
[280] Assuming no objection from a third party owner of the graphical image.
[281] *Greenberg v. National Geographic Soc*., 244 F.3d 1267 (11th Cir. 2001).
[282] *Id*. at 1269.
[283] *Id*. at 1275.
[284] 17 U.S.C. § 107 (1976).

exclusive right under § 106(2) to prepare derivative works based upon his copyrighted photograph."[285] The Society selected ten preexisting works, photographs included in covers of ten issues of the Magazine, including Greenberg's, and transformed them into a moving visual sequence that morphed one into the other.[286] The court stated that "this sequence, an animated, transforming selection and arrangement of preexisting copyrighted photographs constitutes at once a compilation, collective work, and, with reference to the Greenberg photograph, was a derivative work."[287] Given the nature of avatars, existing as bits and normally accessible on the internet, such transformative uses as shown in Greenberg, may also apply to avatars; this could bring up a host of issues concerning the protection of avatars. However, based on case law to date, the decision in *Greenberg* provides support that the morphing of avatars while not actionable under the CPPA, given the *Ashcroft* decision, may be actionable under copyright law, that is, if the court views the morphed image as a violation of the owner's derivative rights.

Finally, in *Bloomstein v. Paramount Pictures Corp*,[288] plaintiff Bloomstein filed action against defendants Paramount Pictures Corporation ("Paramount") and Lucas Digital Ltd. ("Lucas"), alleging that special effects "morphing" techniques used in the movie "Forrest Gump" infringed United States Patent Nos. 4,600,281 ("the '281 patent") and 4,827,532 ("the '532 patent"), issued to Bloomstein. The case involved interesting issues of claim construction which also relates to the design of virtual avatars. Plaintiff Bloomstein filed suit against defendants Paramount and Lucas alleging that techniques they used to digitally alter facial features in the movie Forrest Gump infringed Bloomstein's '281 and '532 patents.[289] Bloomstein's two patents

[285] Greenberg, *supra* note 281, at 1274.
[286] *Id*. at 1269.
[287] *Id.* at 1274; *See generally Warren Publishing Company, Inc. v. Microdos Data Corp*., 522 U.S. 963 (1997).
[288] *Bloomstein v. Paramount Pictures Corp*., U.S. Dist. LEXIS 20839 (N.D. Cal. 1998).
[289] *Id*. at 2.

essentially describe the same invention.[290] The court reasoned that "When one wishes to dub a new soundtrack containing a new language over the original soundtrack of a motion picture, the differences in the languages may be significant enough to make the lip movements of the faces in the unaltered film fail to conform to the new, dubbed language."[291] Bloomstein invented a process by which the lip movements of a face in the unaltered film could by digitized and altered to conform to the new language.[292] While this case was litigated mainly on the issue of patent infringement and focused on claim construction, still, some interesting insights can be made regarding virtual avatars in general. Much of the technology that an avatar may use to express itself, such as techniques to morph, or digitized speech, are under patent protection, and as the *Bloomstein* case highlights, holders of patents are inclined to protect their rights. Therefore, it should be interesting to see if in the future, there would be a patent infringement action brought based on an avatars conduct, and whether the avatar, or avatar's owner, would respond seeking a declaratory judgment.

VIII. MORAL RIGHTS FOR AVATARS

The doctrine of moral rights refers to rights regarding the personality of the artist and to the preservation of the integrity of his intellectual creations.[293] The Visual Artists Rights Act of 1990 (VARA)[294] adopted in the U.S., provides moral rights protection for artists and protects the personal interests in their work, even after the copyright is transferred to a third-party purchaser.[295] VARA was the result of efforts of moral rights advocates to overcome Congress'

[290] *Id.* at 3.
[291] *Id.* at 9.
[292] *Id*. at 2.
[293] See Ronald B. Standler, *Moral Rights of Authors in the USA* (1988) *available at* http://www.rbs2.com/moral.htm (last visited Oct. 10, 2005).
[294] 17 U.S.C. §§ 101, 106A, 113, 301, 501(a) (1990).
[295] William A. Tanenbaum & Jeffrey M. Butler, *The Impact of the Visual Artists Rights Act*, 9 N.Y. L.J., 1 (1993) (the moral rights provided in the VARA are independent of the usual copyright and are retained by the artist, even if the economic copyrights are sold or assigned).

failure to adopt the moral rights provision of the Berne Convention.[296] The legislation protects works of visual art[297] and gives the artist two kinds of moral rights -- the right of attribution and the right of integrity.[298] The right of attribution allows the artist to claim authorship of a work and prevent the use of her name as the author of any work which she did not create.[299] Presently, no intelligent avatar is awarded attribution rights for its output but this might be a necessary outcome given the avatar's ability to create unique and creative works beyond the original programming. Attribution also allows the artist the right to prevent the use of her name in connection with a mutilated, distorted or otherwise modified work, if that alteration would be "prejudicial to . . . her honor or reputation."[300] Likewise, the right of integrity gives an artist the right to prevent intentional mutilations, distortions and other modifications of a work, which would be prejudicial to her honor or reputation.[301] All of the rights granted under the Act may not be transferred but may be waived by the artist.[302]

The passing of the VARA was a big step towards recognizing moral rights in the United States. However, the enacted version of the Act does not protect motion pictures, even though the original version of the VARA provided protection for such films.[303] Without the protection that the VARA provides other artists, film directors can have grossly altered works attributed to them.[304] One difference, however, between those works protected by the VARA and motion

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[296] Since Congress felt that U.S. law already provided such protection in the form of unfair competition, privacy, defamation and misrepresentation causes of action and in certain provisions of the Copyright Act, it chose not to include the moral rights section of Berne in the ratification legislation. *See Id*.

[297] "A work of visual art is - (1) a painting, drawing, print, or sculpture, existing in a single copy, in a limited edition of 200 copies or fewer ... (2) a still photographic image produced for exhibition purposes only ...." 17 U.S.C. s 101 (1990).

[298] "The right of attribution ... is known as the right of paternity in European practice." Tanenbaum & Butler, *supra* note 295, at 11, col. 1.

[299] 17 U.S.C. § 106A(a)(1) (1990).

[300] 17 U.S.C. § 106A(a)(2) (1990).

[301] 17 U.S.C. § 106A(a)(3) (1990).

[302] 17 U.S.C. § 106A(e)(1) (1990).

[303] Timothy M. Casey, *The Visual Artists Rights Ac*t, 14 Hastings Commun. & Ent. L. J. 85, 98 (1991).

[304] *Id*.

pictures is that when films are colorized or otherwise altered, the original generally still exists;[305] but when a "painting or sculpture is altered, the original work is changed forever."[306] Virtual avatars seem to fit into the film category since the concept of an "original" is difficult to apply to virtual avatars given that they exist as bits. If courts follow this reasoning, a virtual avatar could not be protected under VARA.

The moral rights doctrine is included in the copyright laws of many European countries, as well as the laws of countries subscribing to the Berne Convention for the Protection of Literary and Artistic Works.[307] Given that avatars reside in a virtual environment which is most likely accessible on the internet, the moral rights doctrine as applied in Europe could be relevant for the protection of avatars. Article 6bis of the Berne Convention requires that countries that are members recognize, independently of the author's economic rights, that "the author shall have the right to claim authorship of the work"'--the right of paternity--and "to object to any distortion, mutilation or other modification of, or other derogatory action in relation to the said work, which would be prejudicial to his honor or reputation"'--the right of integrity.[308] The scope of moral rights protection varies among countries that recognize these rights.[309] However, the doctrine encompasses three major elements: (1) the right of disclosure; (2) the right of paternity; and (3) the right of integrity.[310] Under the right of disclosure, the creator has the privilege of determining when to release his work. The basis of this right is the theory that the creator is the sole judge of

[305] 17 U.S.C. §101 fully defines "work of visual art" as (1) a painting, drawing, print, or sculpture, existing in a single copy, in a limited edition of 200 copies or fewer that are signed and consecutively numbered by the author, or, in the case of a sculpture, in multiple cast, carved, or fabricated sculptures of 200 or fewer that are consecutively numbered by the author and bear the signature or other identifying mark of the author; or (2) a still photographic image produced for exhibition purposes only, existing in a single copy that is signed by the author, or in a limited edition of 200 copies or fewer that are signed and consecutively numbered by the author..

[306] Casey, *supra* note 303, at 99.

[307] *See* BERNE CONVENTION IMPLEMENTION ACT of 1988, Pub. L. No. 100- 568, 102 Stat. 2853 (1988).

[308] Berne Convention for the Protection of Literary and Artistic Works, ar 6bis (Sept 9, 1886; revised July 24 1974 and amended 1979; entered into force for the U.S. Mar. 1, 1989 (Sen. Treaty Doc. 99-127)) U.S.T. Lexis 160 or 1 B.D.I.E.L. 715.

[309] Kohs, *supra* note 222, at 11-15.

[310] *Id*. at 11-12.

when a work is first ready for public dissemination.[311]

The second element of the doctrine of moral rights, the right of paternity, entitles the author to have his name and authorship recognized.[312] This right allows the creator to present himself to the public as the creator of a work. Furthermore, the right of paternity permits the author to require others to acknowledge his authorship.[313] Additionally, this right enables the author to prevent others from attributing works to him which he did not originate.[314] The third element, the right of integrity, is the right most pertinent to virtual avatars. The right of integrity enables the creator to prevent any distortion of or modification to his work, if the alteration would constitute a misrepresentation of his artistic expression.[315] This right, like the other moral rights, is held by the creator, and is independent of any economic rights that he may or may not have in the work.[316]

The United States enacted the Berne Convention Act in 1988.[317] However, the implementing legislation indicated that the law in the United States as it existed on the date of enactment satisfied the United States' obligations under Article 6bis of the Berne Convention and that no further rights were to be recognized for that purpose.[318] Thus, the Implementation Act did not change the pre-Berne Convention "balance of rights between American authors and proprietors, modify current copyright rules and relationships, or alter the precedential effect of

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[311] *Id* at 12.
[312] *Moral Rights*, *available at* http://art.ntu.ac.uk/liveart/issues/Chapter7.htm (last visited Nov. 3, 2005).
[313] *Id.*
[314] Martin A. Roeder*, The Doctrine of Moral Rights: A Study in the Law of Artists, Authors and Creators*, 53 Harv. L. Rev. 554, 561-562 (1940).
[315] Kohs, *supra* note 222, at 12.
[316] *Id*. at 12.
[317] Berne Convention Implementation Act, s*upra* note 307.
[318] *Id.* (The Act amends title 17 of the United States Code to make the changes in the United States copyright law that are necessary for the United States to adhere to the Berne Convention. Berne Convention Implementation Act of 1988).

prior decisions.'"[319] As section 3(b) of the Berne Convention Implementation Act stated, no change in American law regarding the right of paternity or the right of integrity would occur as the result of the implementation of this new legislation.[320] Accordingly, the legal theories based upon provisions of the Lanham Act and common law principles, which the courts previously had used to protect author's moral rights, are currently the law in the United States.

Another legal theory used by the courts to protect the integrity of a work prior to the United States' ratification of the Berne Convention was the legal theory embodied in the law of defamation. An action for defamation protects an individual from harm to his reputation or his standing in the community.[321] Given the ability of avatars to take on the look of another person, this tort may still serve people who have been harmed by a "look-alike" avatar; especially if it portrays them in a false light. For example, in *Clevenger v. Baker Voorhis & Co*.,[322] a publisher revised an edition of a well-known attorney's lawbook. By including the author's name on the title page, the revision implicitly misrepresented that the author himself, rather than the publisher, had written the revision, which contained many errors.[323] Because publishing in the name of a well-known author of a literary work tended to injure his position in the legal community, the court held that the plaintiff had a cause of action against the publisher based upon defamation.[324] Similarly, in *Ben-Oliel v. Press Publishing Co*., the Court of Appeals of New York held that attribution to a well-known authority on the social customs of Palestine and

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[319] *Id.*

[320] Section 3(b) of the Act states: Certain Rights Not Affected.--The provisions of the Berne Convention, the adherence of the United States thereto, and satisfaction of United States obligations thereunder, do not expand or reduce any right of an author of a work, whether claimed under Federal, State, or the common law.
(1) to claim authorship of the work; or (2) to object to any distortion, mutilation, or other modification of, or other derogatory action in relation to, the work, that would prejudice the author's honor or reputation, *see* Berne Convention Implementation Act, *supra* note 307.

[321] *See* Furine Blaise, *Game Over: Issues Arising When Copyrighted Work is Licensed to Video Game Manufacturers,* 16 Alb. L.J. Sci. & Tech. 517 (2005).

[322] *Clevenger v. Baker Voorhis & Co.*, 168 N.E.2d 643 (Ct. App. N.Y. 1960)**.**

[323] *Id.* at 644.

[324] *Id*. at 645-646.

Mosaic symbolism of an inaccurate newspaper article concerning that topic, which she did not write, constituted an action based on libel.[325] As the foregoing discussion demonstrates, section 43(a) of the Lanham Act, as well as the law of defamation, are legal theories used by the courts to preserve the integrity of an author's work. And both theories may aid a party who alleges that they have been harmed by an avatar. Could such theories also be used by intelligent avatars to protect the integrity of their image and output?

VIIII. CONCLUSIONS

There are three notable trends in the design of virtual avatars: (1) they are getting smarter, (2) their physical appearance is becoming more photorealistic and human-like, and (3) their behavior is becoming more sophisticated. In regards to the three points above, imagine one day that a virtual avatar claims that it is a person,[326] and that it is therefore entitled to certain constitutional rights. Should the law grant constitutional rights to intelligent avatars that have intellectual capacities like those of humans? The answer may turn out to vary with the nature of the constitutional right and our understanding of the underlying justification for the right.[327] For example, *Samuelson*[328] and *Miller*[329] and numerous other legal scholars have previously noted that the rationale for copyright is to provide an incentive for authors in order to encourage them to create copyrightable works; and as they argue, since "software and machines" currently need no such incentive to create works, there can be no copyright awarded to such entities.

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[325] *Ben-Oliel v. Press Publishing Co.,* 167 N.E. 432 (Ct. App. N.Y. 1929); *see also American Law Book Co. v. Chamberlayne,* 165 F. 313 (2nd Cir. 1908) (acknowledging possibility of recovering damages for libel resulting from publication of mutilated or altered form of author's work).

[326] Hans Moravec, *Mind Children: The Future of Robot and Human Intelligence*, at 59-68 (Harvard University Press 1988) (Moravec estimated that it would take roughly ten trillion calculations per second to equal the speed of the human brain and that computers will reach this speed around 2020).

[327] *See generally* Curtis E. A. Karnow, *The Encrypted Self: Fleshing Out the Rights of Electronic Personalities* at 117-136, in Curtis E. A. Karnow, Future Codes: Essays in Advanced Computer Technology and the Law (Artech House Publisher 1997).

[328] Samuelson, *supra* note 66.

[329] Miller, *supra* note 101.

Imagine, further, that an intelligent avatar claims that it cannot be owned and is forced into involuntary servitude. A lawyer takes its case, and files a civil rights action on its behalf, against its owner. How should the legal system deal with such a claim? Would the intelligent avatar have standing to pursue such an action?[330] And with regard to intellectual property rights, what if an intelligent virtual avatar creates a work completely independent from a human's input that meets the requirements for copyright? Would the court then award the avatar a copyright for the work? The current answer is surely no- but why not? The work could clearly pass the copyright hurdles of an original work fixed in a tangible medium of expression.[331] What antagonists of the idea of awarding a copyright to an artificial entity argue, comes down to the lack of a human being as an author that created the copyrightable work. For this reason, the issue of personhood for non-human entities becomes an important topic when discussing legal rights for intelligent avatars. Before exploring the issue of personhood for artificially intelligent entities in greater detail, it should be noted that granting legal recognition to non-human entities may not pose an insurmountable problem doctrinally since it has already been done for corporations.[332] In terms of policy considerations, *Samuelson* has previously argued that the ownership allocation between humans and software should not only make sense, but reflect the realities of the world.[333] The realities of the world in regard to intelligent systems has changed dramatically since antagonists argued against the idea of copyright protection for artificially intelligent entities in the 80's and early 90's.[334] *Samuelson's* past statement is even more

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[330] *See generally* Tom Regan, *The Case for Animal Rights* (Berkeley: University of California Press, 1983); Christopher D. Stone, *Should Trees Have Standing? Toward Legal Rights for Natural Objects*, 45 Southern Calif. L. Rev. 450, 458ff (1972); *See generally* Joseph Mendelson III, *Should Animals Have Standing? A Review of Standing Under The Animal Welfare Act*, 24 B.C. Envtl. Aff.L.Rev. 795 (1997).
[331] 17 U.S.C. § 102(a) (1976).
[332] Santa Clara County, *infra* note 363.
[333] Samuelson, *supra* note 66, at 1192.
[334] Samuelson, *supra* note 66; Miller, *supra* note 101.

relevant for these times than when it was first made given the advances in autonomous machines, smart computer vision systems, and self-programming neural nets.[335]

Karnow introduced the term "electronic person", or "epers", when discussing the issue of legal rights for "agents" or "avatars" existing within cyberspace. [336] Taking a liberal view on legal rights for software agents, *Karnow* argued that epers should be allowed to own physical property; maintain bank accounts; enter into contracts; and be recognized as authors of expression, subject to constitutional protection.[337] *Solum*[338] and *Karnow*[339] have also previously addressed the issue of personhood for artificially intelligent entities. According to *Solum*, the question of whether an entity should be considered a legal person is reducible to other questions about whether or not the entity can and should be made the subject of a set of legal rights and duties.[340] For example, the particular bundle of rights and duties that accompanies legal personhood varies with the nature of the entity. In this context, it is interesting to note that both corporations and natural persons are considered legal persons, but they have different sets of legal rights and duties.[341]

Intuitively, when one uses the term "person" they mean to refer to a human being as opposed to a virtual avatar controlled by software.[342] However based on legal principles, the definition of a person is not as straight-forward as one might expect. Black's law dictionary[343]

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[335] One could argue that an intelligent avatar and the programmer, could share rights to any intellectual property created by the avatar, since the programmer wrote the initial software to create the avatar. However, if the avatar where to become truly autonomous and create works independent from the initial programming, would granting the programmer rights to the avatar's property then be similar to the idea of granting property rights to one's parents once the child reached adulthood?

[336] Karnow, supra note 327, at 128.

[337] *Id*. at 128.

[338] Lawrence B. Solum, *Legal Personhood for Artificial Intelligences*, 70 North Carolina Law Review, 1231 (1992).

[339] Karnow, *supra* note 327, at 129-131.

[340] Solum, *supra* note 338, at 1239.

[341] *See generally* Jonathan Chaplin, Political Perspective: Toward A Social Pluralist Theory of Institutional Rights, 3 Ave Maria L. Rev. 147 (2005).

[342] *See generally* Barfield, *supra* note 35.

[343] *Black's Law Dictionary* 1162 (Bryan A. Garner ed., 7th Ed., West 1999).

defines a person as "An entity (such as a corporation) that is recognized by law as having the rights and duties of a human being." Furthermore, an artificial person is defined in Black's law dictionary as "An entity, such as a corporation, created by law and given certain legal rights and duties of a human being; real or imaginary, who for purposes of legal reasoning is treated more or less as a human being (also termed a legal person)."[344] Thus, based on the latter definition, an intelligent avatar could be regarded as an artificial person and awarded some legal rights. Interestingly, while all human beings, regardless of intellectual capabilities (e.g., those severely retarded) are considered to be a "legal person", not all persons are considered human beings.[345] Indeed, under common law, corporations are regarded as "persons" with full rights to sue, be sued, hold property, and so on. However, as noted by *Solum*,[346] corporations have [human] boards of directors which exert control over the corporation; in contrast, avatars in some domains already perform complex tasks without the supervision of a human.

Since corporations have the status of a person for some legal purposes, we can ask whether this legal principle should be considered as precedence for the issue of legal personhood for avatars. There are several reasons why legal personhood is denied to current implementations of avatars. One is the lack of a full repertoire of intellectual abilities similar to those of humans; to be granted legal personhood, it will not be enough for avatars to be an idiot savant, an expert in a narrow field of knowledge or conduct (such as making theatre reservations or playing chess); instead avatars will have to exhibit a broad range of intellectual abilities before they begin to approach human-like cognitive and perceptual capabilities, and thus warrant a

[344] *Id.* at 1162.
[345] Barfield, *supra* note 35.
[346] Solum, *supra* note 338, at 1239.

consideration of their status vis-à-vis legal personhood.[347] Another reason why legal personhood is denied to current versions of avatars is the lack of self-awareness in such systems. Without self-awareness, not only is an avatar denied legal personhood, but also denied the characteristic of being alive. In fact, when the crucial aspects of personhood are irretrievably lost, it is generally assumed that an individual has died, i.e., is no longer a person.[348] Finally, another reason why avatars are denied legal personhood status is based on legal precedence; no such entity has ever approached human-levels of intelligence or self-awareness, and thus, the issue of legal personhood for such systems has not been considered in any jurisdiction in the world.[349]

The debate on legal personhood for avatars can benefit by a consideration of the legal status of humans and great apes, two species which clearly differ in levels of intelligence; although great apes are certainly intelligent creatures and may even have a sense of self-awareness.[350] We deny legal personhood to great apes not only because they are not human beings, but also because they have a significantly lower level of intelligence than the "normal" human and it is unclear as to whether they exhibit self-awareness[351] Although some apes may have the capability to learn language as evidenced through signing at the level of a 3-4 year old child,[352] they are not provided legal personhood. In contrast, people with severe cognitive defects are provided the legal protection of personhood, regardless of their intellectual capabilities; although the state may assume some responsibility toward their upkeep. So, if humans with

[347] Barfeld, *supra* note 35. However, note that corporations normally fulfill a need within a defined area, that is, they do not show a wide range of behavior characteristic of a human being.
[348] Seven Goldberg, *The Changing Face of Death: Computers, Consciousness and Nancy Cruzan*, 43 Stanford Law Review 659 (1991).
[349] *See generally* Barfield, *supra* note 35; *See generally* Martine Rothblatt, Bioethics: Should We Stop a Company From Unplugging an Intelligent Machine? *Available at* http://www.Kurzweilai.net/meme/frame.html?m=4 (last visited Nov. 9, 2005).
[350] *The Great Ape Legal Project*, *available at* http://www.aldf.org/article.asp?cid=20 (last visited Oct.30, 2005); Jens David Ohlin, *Is the Concept of the Person Necessary for Human Rights*? 105 Colum. L. Rev. 209 (2005).
[351] Adam J. Kolber, *Standing Upright: The Moral and Legal Standing of Humans and Other Apes*, 54 Stan. L. Rev., 163 (2001).
[352] Elizabeth L. Decoux, *In the Valley of the Dry Bones: Reuniting the Word "Standing" with its Meaning in Animal Cases,* 19 Wm & Mary Envtl, L & Pol'y Rev. 681 (2005).

cognitive defects and those severely retarded are awarded the status of a legal person, why then not consider such rights appropriate for intelligent avatars that may at the least be equally smart?

We can also consider the legal status of children in current society as legal precedence for the treatment of intelligent avatars.[353] Under the law, children share several attributes of personhood with adults, but their immaturity legally disables them from receiving all the legal rights of an adult.[354] Until fully possessed of mature reason and adult perspective, the law does not allow children to assume either the prerogatives or burdens of full legal personhood. However, upon the age of majority, the law fully invests its citizens of constitutional rights, of legal prerogatives and burdens.[355] Behind the age of majority, the law seems to manifest a gradual investment in children of legal personhood roughly corresponding to their gradual attainment of adulthood.[356] Until the age of majority, however, the law views children as lacking in at least some essential attributes of adulthood necessary to their exercise of legal rights and assumption of legal burdens. Arguably, we exclude children from legal standing and personhood for their own protection, providing other remedies for their claims. Indeed, the law assigns children's claims to parents and the state, assuming one or the other party will best represent children's interests. Children cannot, the reasoning follows, know or do what is best for them. In the context of intelligent avatars, would it be prudent to treat such entities from a similar legal perspective as minors, affording them some legal rights, but not those of a mature adult? What the above examples seem to suggest is that granting significant rights to avatars, based solely on

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[353] *See generally* Ralph C. Brashier, *Children and Inheritance in the Nontraditional Family*, 93 Utah L. Rev. 983 (1996); *Children's Rights an Overview*, *available at* http://www.law.cornell.edu/topics/childrens_rights.htlml (last visited Nov. 5, 2005); *Children's Rights available at* http://hrworg/children/child-legal.htm (last visited Nov. 6, 2005).

[354] Wendy Anton Fitzgerald, *Maturity, Difference, and Mystery: Children's Perspectives and the Law*, 36 Ariz. L. Rev. 11 (1994).

[355] Kimberly M. Mutcherson, *Whose Body is it Anyway? An Updated Model of Healthcare Decision-Making Rights for Adolescents,* 14 Cornell J.L. & Pub. Policy 251 (2005).

[356] *Id*.

intellectual capability, is ripe with contradictions.[357] With the exception of corporations, the essential aspect of an entity that seems to lead to legal rights is self-awareness and human-like intelligence.[358]

For the time being virtual avatars will be regarded as computer programs consisting of datasets and algorithms, along with a visual representation- as such, they may receive the legal protection that is awarded software, and the protection awarded images from copyright and trademark law.[359] However, unlike standard software programs, intelligent avatars may deviate from the originally programming until they are no longer recognizable to the original programmer(s). Avatars may run on a single computer or local cluster or in a distributed fashion across a public network. They may be designed using "classical" or deterministic programming algorithms, in which case they should be able to summarize or "explain" their thought process, which could then be evaluated using step by step logic. More likely, however, intelligent avatars will have a substantial "neural network" component so their internal state may consist of a large number of unlabeled weight values, in which case they may output an answer without being able to "explain" it. Or intelligent avatars may have a reflective capability that can at least partly describe and summarize the weights used to reach a given conclusion. According to one commentator, one might expect avatars to become strong believers in intellectual property law (copyrights, patents, trade secrets, etc.), to prevent their code and data from being stolen and copied, thus dramatically lowering their potential wages due to competition with clones of themselves.[360]

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[357] Barfield, *supra* note 35.

[358] Which according to Kurzweil, a leading futurist, may occur in this century, *see* Ray Kurzweil, *The Singularity is Near: When Humans Transend Biology* (Viking Press 2005).

[359] *Data Cash Sys. Inc. v. JS&A Group, Inc*. 480 F.Supp. 1063 (N.D. Ill. 1979) (dealing with the copyrightability of computer programs); *See generally* Pamela Samuelson, *CONTU Revisited: The Case Against Copyright Protection for Computer Programs in Machine Readable Form*, 1984 Duke L.J. 663 (1984).

[360] *See* Karnow, *supra* note 327, at 128 (including a discussion of the rights of electronic persons or “epers”).

Since all machines have owners who pay their rent, power, and network connection charges, under the current law we can always look to the owner, whether a human or a corporation, and hold them responsible, while assuming that the avatar merely acts as their agent.[361] Under this view, the avatars, no matter how smart or decentralized, is just an item of personal property. If the avatar enters into a contract, that agreement binds the owner (subject to the usual rules of contract formation) and not the avatar, and if the avatar commits a tort its owner is liable to pay compensation for any damages.[362]

In conclusion, a major event in U.S. corporate law was the landmark Supreme Court decision to treat corporations as "persons" entitled to the equal protection of the laws under the 14th Amendment.[363] Will there also be a similar landmark case for virtual avatars, or, as necessity dictates, will rights for avatars appear slowing without any particular landmark decision paving the way for their emancipation.[364] While many questions remain unanswered as there is literally no case law on the rights of artificially intelligent entities in general, and intelligent avatars in specific, and given the increasing intelligence of avatars, significant legal disputes involving their actions may very likely arise in the future. This paper provided a framework in which to consider how future litigation may develop and potential causes of action which may be raised.

[361] *See generally* Solum, *supra* note 338.
[362] *See generally* Karnow, *supra* note 40 (discussing the difficulty of finding a responsible party given a distributed computing system).
[363] *Santa Clara County vs. Southern Pacific Railway,* 118 U.S. 394 (1886).
[364] Barfield, *supra* note 35.