

Southern Methodist University

SMU Scholar

Perkins Faculty Research and Special Events

Perkins School of Theology

Spring 4-21-2020

Evolutionary Bioethics Advanced by Ernest Everett Just: Implications for Biology, Ethics, and Theology

Theodore Walker
twalker@smu.edu

Follow this and additional works at: https://scholar.smu.edu/theology_research



Part of the Biological and Physical Anthropology Commons, Cell and Developmental Biology Commons, Development Studies Commons, Ecology and Evolutionary Biology Commons, Environmental Studies Commons, History of Science, Technology, and Medicine Commons, Intellectual History Commons, and the Microbiology Commons

Recommended Citation

Walker, Theodore, "Evolutionary Bioethics Advanced by Ernest Everett Just: Implications for Biology, Ethics, and Theology" (2020). *Perkins Faculty Research and Special Events*. 23.
https://scholar.smu.edu/theology_research/23

This document is brought to you for free and open access by the Perkins School of Theology at SMU Scholar. It has been accepted for inclusion in Perkins Faculty Research and Special Events by an authorized administrator of SMU Scholar. For more information, please visit <http://digitalrepository.smu.edu>.

Evolutionary Bioethics Advanced by Ernest Everett Just: Implications for Biology, Ethics, and Theology

A paper for the April 2020 Biennial of the Association of Practical Theology

Theodore Walker Jr.

Abstract -

Ernest Everett Just (1883-1941) is an acknowledged “pioneer” in biology, being honored with a Black Heritage postage stamp in 1996. Here we discover that Just also made pioneering contributions to general evolutionary bioethics (distinct from special medical bioethics) by advancing a cell-biology-rooted theory of the origin and continuing evolution of ethical behavior influenced by the “law of environmental dependence.”

See especially “The Origin of Man’s Ethical Behavior (1941, unpublished book manuscript) by Ernest Everett Just and Hedwig Schnetzler Just, discovered in 2018 among the collected papers of E.E. Just at the Moorland-Spingarn Research Center at Howard University.

Accordingly, evolution is essential to both biology and ethics/moral theory, to natural scientific theory of life (Darwin) coupled with and mutually dependent upon natural scientific theory of ethical behavior (E.E. Just). Such evolutionary bioethics is consistent with “scientific theology” (Adolf von Harnack), and with liberating theological ethics (John Wesley, Martin Luther King Jr.)

Part 1 - Ernest Everett Just (1883-1941) on Postage Stamps: An acknowledged “pioneer” in biology, and an **UNacknowledged pioneer in evolutionary bioethics***

*Originally, the term “bioethics” referred to *general* bioethics (Jahr 1927; Potter 1971, 1988; Sass 2007), *not special* bioethics such as specifically medical bioethics. With respect to work by E.E. Just, the original generic meaning applies. Though E.E. Just did not employ the term “bioethics” (a term first popularized in English in 1971), in accordance with the original generic meaning of the term, Just’s evolutionary theory of “general biology” and “ethical behavior” (Just 1940, 1941) is appropriately described as a theory in “evolutionary bioethics” (distinct from medical bioethics).

Ernest Everett Just, Biologist

E.E. Just’s status as a pioneer in biology was emphasized when (20 July 2019) I said the following:

Ernest Everett Just (born 1883, died 1941) taught biology in the department of zoology at Howard University in Washington DC from 1909 to 1941. He is famous for his work in cell biology. Even if we do not recognize his name, all of us have learned what Just first observed and described: when a fertilizing spermatozoon penetrates the egg cell surface, a “wave of negativity” radiates from the point of penetration sweeping around the cell surface, thereby repulsing all other sperm (Byrnes 2010). Just authored more than seventy published research articles, and co-authored with F. R. Lillie the chapter on “Fertilization” in *General Cytology: A Textbook of Cellular Structure and Function for Students of Biology and Medicine* (1924) edited by Edmond V. Cowdry; and he authored two published books: *The Biology of the Cell Surface* (1939a), and *Basic Methods for Experiments on Eggs of Marine Animals* (1939b).

Today, many reputable research biologists describe Just as a “pioneer” because of his discoveries in cell biology, and because many biologists are following research paths and methods, including “cell surface” studies, that were pioneered by Just (Byrnes 2009, 2010; Byrnes and Eckberg 2006; Crow 2008; Dover 1954; Grinnell 1975; Mangal 2018; Manning 1983; Newman 2013; Williams et al. 2013).

In his award-winning biography *Black Apollo of Science: The Life of Ernest Everett Just* (1983) MIT historian of science Kenneth R. Manning reports that, during the 1920s and 1930s, Just was “the current authority on fertilization” with a national and international reputation (1983: 149). Manning’s book inspired many to celebrate Just’s work. And in 1996, the US Postal Service issued a Black Heritage postage stamp honoring Just. The postage stamp caption is “Ernest E. Just Biologist.”



[author-captured image]

Subject/Image: Ernest Everett Just

Year: 1996

Country: USA

Face Value: 32 US cents

Description: Vertical, multi-colored and lithographed portrait fills the stamp frame.
Black Heritage Series, caption: "Ernest E. Just - Biologist"

Link to online image: https://arago.si.edu/record_165677_img_1.html

Date accessed: 19 March 2018

Catalog Codes: Sn **3058**

Sumitography by Lillie R. Jenkins

[See "The 'Law of Environmental Dependence' - Biology and Ethics in the Work of Ernest Everett Just: + Found – some 251 mostly typed pages" (20 July 2019) by Theodore Walker Jr. online at <https://scholar.smu.edu/theology_research/21>.]

[And see "Ernest Everett Just (1883-1941): Hero in Cell Biology and in Evolutionary Bioethics" (February 2020) by Theodore Walker Jr., via Johns Hopkins University, Meharry Medical College *Journal of Health Care for the Poor and Underserved*, vol. 31, no. 1, pp. 4-10, online at <muse.jhu.edu/article/747768> and via Howard University at <https://biology.howard.edu/sites/biology.coas.howard.edu/files/2020-03/project_muse_747768.pdf>.]

Ernest Everett Just, Evolutionary Bioethicist

The above E.E. Just sumitography (from Latin "sumit" indicating postage stamp) also appears in "The Bioethical Significance of 'The Origin of Man's Ethical Behavior' (October 1941, unpublished) by Ernest Everett Just and Hedwig Anna Schnetzler Just" (January 2020) in the

Journal of the South Carolina Academy of Science (Vol. 18: Iss. 1, Article 4) [<https://scholarcommons.sc.edu/jscas/vol18/iss1/4> >], where I join the US Postal Service in celebrating E.E. Just's acknowledged pioneering contributions to biology, while at the same time emphasizing E.E. Just's **un**acknowledged pioneering contributions to evolutionary bioethics. Here my abstract says:

E. E. Just (1883-1941) is an acknowledged "pioneer" in cell biology, and he is perhaps *the* pioneer in study of egg cell fertilization. Here we discover that Just also made pioneering contributions to general biology and evolutionary bioethics. Within Just's published contributions to observational cell biology, there are substantial fragments of his theory of ethical behavior, a theory with roots in cell biology. In addition to such previously available fragments, Just's fully developed theory is now available. This recently discovered unpublished book-length manuscript argues for the biological origins of ethical behavior (evolving from cells to humans, within a living environment, and subject to the "law of environmental dependence"). Contemporary research is starting to catch up to Just. In evolutionary bioethics, Just is *the* pioneer.

This January 2020 article further justifies my 20 July 2019 proposal that there should be two new E.E. Just postage stamps to supplement the 1996 caption *Ernest E. Just - Biologist*.

For pioneering the idea that, in tandem (mutual dependence) with evolving biological structures, *ethical behaviors evolve* (from cells to humans), there should be a postage stamp with the caption *Ernest Everett Just - evolutionary bioethicist*.

And

for pioneering the idea of a natural "law of environmental dependence," there should be a postage stamp with the caption *Ernest Everett Just - environmental bioethicist*.

Evolutionary bioethics and environmental bioethics were briefly advanced within some of Just's publications in cell biology (Just 1932; 33, 1939a, 1939b, 1940), and fully developed in "The Origin of Man's Ethical Behavior" (October 1941, unpublished) where Just and Just formulate the *law of environmental dependence* (pp. 157, 159, 160, 162, 165, 168 [also 166, 174]).
(Walker 20 July 2019: 3-4)

The idea of a cell-biology-rooted theory of the origin and evolution of ethical behavior influenced by a natural "law of environmental dependence" (E. E. and H. S. Just 1941) was so far ahead of its time that, 77+ years later, it remains a pioneering idea ahead of our time.

Part 2 - Biology, Ethics, and Theology

In “Interdisciplinary Convergences with Biology and Ethics via Cell Biologist Ernest Everett Just and Astrobiologist Sir Fred Hoyle,” a chapter in *Panentheism and Panpsychism* (2020) edited by Godehard Brüntrup, Benedikt Paul Göcke, and Ludwig Jaskolla, I say the following:

In “Mutual Aid and Ethics” [the concluding chapter in “The Origin of Man’s Ethical Behavior”] Just and Just held that the prevailing interpretation of Darwin’s theory of natural selection “dates a crisis in ethics” (1941: 211). Though there was debate, given prevailing overemphasis upon competitive struggle and little emphasis upon mutual aid, most biologists conceived of nature as “red in tooth and claw” [Tennyson] (1941: 14). Hence, natural scientists had come to conceive that ethical behavior (altruism-morality) is *not* natural.

In “a history of the altruism-morality debate in biology” (2013: 11-29) by Oren Harmon [in *Evolved Morality: The Biology and Philosophy of Human Conscience* (Boston: Brill, 2014) edited by Frans B. M. de Waal, Patricia Smith Churchland, Telmo Pievani, and Stefano Parmigiani], this history is chronologically ordered in four dyads: (1) Huxley and Kropotkin, (2) R. A. Fisher and Alfred Emerson, (3) Vero Cope Wynne-Edwards and George Williams, and (4) Bill Hamilton and George Price. With respect to the earliest dyad, we may now add that Just and Just advanced Kropotkin’s emphasis upon mutual aid (counterbalancing Huxley’s overemphasis upon struggle) by finding “the origin of man’s ethical behavior” in natural evolutionary processes. Hence, contrary to the prevailing separation of nature (and natural science) from ethics, according to Just and Just, from cells to humans, the origin and evolution of ethical behavior *is* natural.

[Also in “Crisis in Ethics,” a section of “The Bioethical Significance of ‘The Origin of Man’s Ethical Behavior’ (October 1941, unpublished) by Ernest Everett Just and Hedwig Anna Schnetzler Just” (January 2020) by Theodore Walker Jr. in the *Journal of the South Carolina Academy of Science*, v18, issue 1, article 4. <<https://scholarcommons.sc.edu/jscas/vol18/iss1/4>>]

Ethical behavior *is* natural, and therefore theorizing about the origin and evolution of ethical behavior *is* part of natural science, part of biology.

Scientific Theology

E.E. Just conceived that theory of the origin and evolution of ethical behavior is essential to evolutionary biology, and that such evolutionary bioethics is consistent with natural scientific theology.

The term “scientific theology” comes from theologian-historian Adolf von Adolf von Harnack, to whom E.E. Just offered favorable credit for “inspiration” and influence in the Preface to *The Biology of the Cell Surface* (1939a: ix). In 1929-1930 at the Kaiser-Wilhelm-Institute für Biologie in Berlin, E.E. Just spent “many evenings” with Harnack discussing the necessity of bringing “science and religion into greater harmony” (Manning 1983: 190).

[Also, concerning Roger Airliner Young, an African-American female biologist: In 1929-1930 at the Kaiser-Wilhelm-Institute für Biologie in Berlin, up to ten “artists and technicians” invested “several hours a day ... studying the slides ... drawing painstaking diagrams and making careful measurements” of “a large group of slides” E.E. Just “had brought with him from America ... the result of the ultraviolet work on *Nereis limbata* that he and Roger Young had begun at Woods Hole in the mid-1920s” (Manning 1983: 188). Also, (Diaz 7 March 2007).]

Creation

E.E. Just rejected the idea of "special creation" while correctly insisting that creation through evolution does not contradict theology (Just and Just 1941: 9-10).

One of the more obvious implications of affirming “creation through evolution” (Hartshorne 1984) is that any putative special/fast creation of creatures (spontaneous creation or divine special creation of creatures) would be followed by evolution. This is because when we affirm the reality of creatures, unavoidably, we affirm creaturely creativity (the defining activity of creatures). And given a creation populated with creatures creating, re-creating, and pro-creating, we are given evolutionary (or devolutionary) processes. No generation creates/procreates an identical generation. Physiological evolution (or devolution) among creatures is unavoidable.

Our theological affirmation, that God is the Creator of a creation with creating-recreating-procreating creatures, entails affirming physical and spiritual-ethical evolution. Church folk often find it difficult to conceive that, instead of remaining forever fixed, ethical prescriptions must evolve (or stagnate and devolve).

[Gratitude to Rev. Kenneth E. Walker for help with distinguishing divine fast creation of humans as originally human (a form of special creation) from divine slow creation of humans through evolution from primitive cellular origins (E. E. Just).]

Further evolution in ethical behavior

For marine egg cells, E.E. Just’s criterion for environmental “normality” is “one hundred per cent development” (E.E. Just 1939a: 22, 22-24), meaning 100% cell division after fertilization (Manning 1983: 111, 78-84, 110-112).

Hence, we may propose that an EEJust-inspired-egg-cell-biology-rooted theory of ethics would be a theory of ethics that values (as natural-normal-normative) environments that yield 100%

flourishing. Accordingly (according to 100% flourishing), conceiving of a “farther evolution” in human ethical behavior (Just and Just 1941: 176) is consistent with Rev. John Wesley prescribing the abolition of slavery during the 18th century (an evolutionary advance beyond previous history), followed by Rev. Martin Luther King Jr. prescribing the total (100%) abolition of poverty in the 20th century (another evolutionary advance).

“The time has come for us to civilize ourselves by the total, direct and immediate abolition of poverty”

(MLK Jr 2010 [June 1967]: 175).

A significantly further evolution in human ethical behavior will lead to abolishing slavery (Wesley), abolishing poverty and war (MLK Jr.), abolishing dirty energy (David Ray Griffin), and abolishing ecological injustice, including environmental racism (Karen Baker-Fletcher). Such evolution in ethical behavior will yield progress toward beloved “community” with nature, with each other, and with God, instead of devolution and “chaos” (MLK Jr).

[See *Where Do We Go from Here: Chaos or Community?* (Boston: Beacon Press, 2010 [June 1967]) by Rev. Dr. Martin Luther King Jr.]

References

Baker-Fletcher, Karen. (1998). *Sisters of Dust, Sisters of Spirit: Womanist Wordings on God and Creation*. Minneapolis: Fortress Press.

Byrnes, W. Malcolm. (2009). “Ernest Everett Just, Johannes Holtfreter, and the Origin of Certain Concepts in Embryo Morphogenesis” in *Molecular Reproduction & Development*, 76: 912-921.

Byrnes, W. Malcolm. (February 2010). “Ernest Everett Just: Experimental Biologist Par Excellence,” via the American Society for Biochemistry and Molecular Biology, online at <www.asbmb.org/asbmbtoday/asbmbtoday_article.aspx?id=5878>.

Byrnes, W. Malcolm and William R. Eckberg. (1 August 2006). “Ernest Everett Just (1883-1941) – An early ecological developmental biologist” in *Developmental Biology*, 296 (1): 1-11, online at <<http://dx.doi.org/10.1016/j.ydbio.2006.04.445>>.

Crow, James F. (August 2008). “Just and Unjust: E. E. Just (1883-1941)” in *Genetics*, 179: 1735-1740.

Diaz, Sara P. (7 March 2007). “Roger Arliner Young (1889-1964)” online at <<https://www.blackpast.org/african-american-history/young-roger-arliner-1889-1964/>>.

Dover, Cedric. (June 1954). "The Significance of the Cell Surface (The Work of E. E. Just)." *Journal of the Zoological Society of India*, 6 (1), 3-42.

Griffin, David Ray. (2015). "The Abolition of Dirty Energy" is chapter 18 in *Unprecedented: Can Civilization Survive the CO2 Crisis?* Atlanta: Clarity Press.

Grinnell, Frederick. (August 1975). "Cell attachment to a substratum and cell surface proteases." *Archives of Biochemistry and Biophysics* 169.2: 474-482. Online at <[https://doi.org/10.1016/0003-9861\(75\)90190-3](https://doi.org/10.1016/0003-9861(75)90190-3)>.

Harman, Oren. (2013). "A History of the Altruism-Morality Debate in Biology" (pp. 11-29) in *Evolved Morality: The Biology and Philosophy of Human Conscience* (Leiden; Boston: Brill, 2014), edited by Frans B. M. de Waal, Patricia Smith Churchland, Telmo Pievani, and Stefano Parmigiani.

Harnack, Adolf von. (1904). *What is Christianity? - Sixteen lectures delivered in the University of Berlin during the winter-term, 1899-1900*, 3rd rev. ed., translated from German to English by Thomas Bailey Saunders. New York: G. P. Putnam's Sons.

Harnack, Adolf von. (1930). "Stages of Scientific Knowledge" in *Adolf von Harnack: Liberal Theology at its Height* (New York: Collins, 1989) edited by Martin Rumscheidt.

Hartshorne, Charles. (1984). "Creation through Evolution" (pp. 65-95), chapter three in *Omnipotence and Other Theological Mistakes*. Albany, New York: State University of New York Press.

Jahr, Fritz. (1927). "Bio-Ethics: A Review of the Ethical Relationships of Humans to Animals and Plants." *Kosmos* 24: 4 [as cited in (Sass 2007)].

Jenkins, Lillie R. (19 March 2018). Ernest Everett Just - Sumitography, 1996 USA postage stamp, 32 cents, Black Heritage Series, Catalogue Code: Sn 3058 [postage stamp caption: "Ernest E. Just - Biologist"].

Also, see "A Sumitography: A Listing of Postage Stamps Celebrating Contributions to Civil and Human Rights by Martin Luther King Jr. and Associates" (10 April 2018) by Lillie R. Jenkins in *Perkins Faculty Research and Special Events*. 16. https://scholar.smu.edu/theology_research/16

Just, Ernest Everett. (1932). "On the Origin of Mutations" in *American Naturalist*, 66, no. 702: 61-74.

Just, Ernest Everett. (1933). "Cortical Cytoplasm and Evolution" in *American Naturalist*, 67, no. 708: 20-29.

Just, Ernest Everett. (1939a). *The Biology of the Cell Surface*. Philadelphia: P Blakiston's Son [New York: Garland Publishing, 1988 reprint].

Just, Ernest Everett. (1939b). *Basic Methods for Experiments on Eggs of Marine Animals*. Philadelphia: P. Blakiston's Son.

Just, Ernest Everett. (April 1940). "Unsolved Problems of General Biology" in *Physiological Zoology*, 13 (2): 123-42.

Just, Ernest Everett, and Hedwig Anna Schnetzler Just. (October 1941). "Mutual Aid and Ethics" is the concluding chapter in the Walker-Jenkins-Byrnes-Newman transcription of the unpublished book manuscript "The Origin of Man's Ethical Behavior."

Just, Ernest Everett, and Hedwig A. Schnetzler Just. (October 1941). "The Origin of Man's Ethical Behavior." Unpublished (and missing from October 1941 to May 2018).

In April 1941 the manuscript title was "Ethics and the Struggle for Existence," then "later titled 'The Origin of Man's Ethical Behavior'" (Manning 1983: 327, 385 note 12). Just died Monday morning 27 October 1941 (1983: 330), before finding a publisher. [Also, this manuscript had been referenced as "some 400 typed pages" in a 15 October 1940 letter from E. E. Just to W. C. Allee, and as "a forthcoming essay" in *Biology of the Cell Surface* (Just 1939a: 367).]

King, Martin Luther, Jr. (2010 [June 1967]). *Where Do We Go from Here: Chaos or Community?* Boston: Beacon Press, with May 1968 foreword by Coretta Scott King, and 2010 Introduction by Vincent Harding.

Kropotkin, Peter [Petr Alekseyevich Kropotkin]. (1902). *Mutual Aid: A Factor of Evolution*, edited by Charles Aldarondo. Kindle Edition: Amazon Digital Services, based upon print edition ISBN 1502589664; CreateSpace Independent Publishing Platform, 2014.

Lillie, Frank R. and E. E. Just. (1924). "Fertilization," a chapter in *General Cytology: A Textbook of Cellular Structure and Function for Students of Biology and Medicine*, edited by Edmond V. Cowdry. Chicago: University of Chicago.

Mangal, Mélina. (2018). *The Vast Wonder of the World: Biologist Ernest Everett Just.*, illustrated by Luisa Uribe. Minneapolis: Millbrook Press.

Manning, Kenneth R. (1983). *Black Apollo of Science: The Life of Ernest Everett Just*. Oxford: Oxford University Press.

Newman, Stuart A. (2013). "Evolution is not mainly a matter of genes" (pp. 26-33; 288-290) in *Genetic Explanations: Sense and Nonsense*, edited by Sheldon Krimsky and Jeremy Gruber. Cambridge, MA: Harvard University Press.

Potter, Van Rensselaer. (1971). *Bioethics: Bridge to the Future*, edited by Carl P Swanson. Englewood Cliffs, New Jersey: Prentice-Hall Biological Science Series.

Potter, Van Rensselaer. (1988). *Global Bioethics: Building on the Leopold Legacy*. East Lansing, Michigan: Michigan State University Press.

Sass, Hans-Martin. (December 2007). "Fritz Jahr's 1927 Concept of Bioethics" in *Kennedy Institute of Ethics Journal*, volume 17, number 4, pp. 279-295 [doi: 10.1353/ken.2008.0006].

Walker, Theodore, Jr. (28 January 2017). "Bioethics in the Work of Ernest Everett Just: + Missing - some 400 pages." *Perkins Faculty Research and Special Events*. 9. <https://scholar.smu.edu/theology_research/9>

Walker, Theodore, Jr. (20 July 2019). "The 'Law of Environmental Dependence' - Biology and Ethics in the Work of Ernest Everett Just: + Found – some 251 mostly typed pages." *Perkins Faculty Research and Special Events*. 21. <https://scholar.smu.edu/theology_research/21>
Also, see a 6 November 2019 SMU-Perkins account of the May 2018 finding online at <<https://blog.smu.edu/perkins/faculty-profile-theodore-walker/>>).

Walker, Theodore, Jr. (January 2020). "The Bioethical Significance of 'The Origin of Man's Ethical Behavior' (October 1941, unpublished) by Ernest Everett Just and Hedwig Anna Schnetzler Just." *Journal of the South Carolina Academy of Science*: volume 18: issue 1, article 4. <<https://scholarcommons.sc.edu/jscas/vol18/iss1/4>>

Walker, Theodore, Jr. (February 2020). "Ernest Everett Just (1883-1941): Hero in Cell Biology and in Evolutionary Bioethics." Via Johns Hopkins University, Meharry Medical College *Journal of Health Care for the Poor and Underserved*, vol. 31, no. 1, pp. 4-10. <muse.jhu.edu/article/747768> and via Howard University at <https://biology.howard.edu/sites/biology.coas.howard.edu/files/2020-03/project_muse_747768.pdf>.

Walker, Theodore, Jr. (2020). "Interdisciplinary Convergences with Biology and Ethics via Cell Biologist Ernest Everett Just and Astrobiologist Sir Fred Hoyle," a chapter in *Panentheism and Panpsychism - Philosophy of Religion Meets Philosophy of Mind Series: Innsbruck Studies in Philosophy of Religion, Volume: 2*, edited by Godehard Brüntrup, Benedikt Paul Göcke, and Ludwig Jaskolla. Mentis Verlag; Leiden, Netherlands: Brill.

Wesley, John. (1774). "Thoughts upon Slavery." London: R. Hawes; Oxford University, 1775.

Williams, Katelyn M. with Bryan A. Wilson, Wendi G. O'Connor, and Monte S. Willis. (2013). "Ernest Everett Just, PhD: Pioneer in Ecological Developmental (Eco-Devo) Biology" in the *Journal of the South Carolina Academy of Science*, volume 11, issue 1: article 5.