

# Cosmological Ideas in the Natural Philosophy of Cadwallader Colden

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*In the history of philosophy, in particular, in the history of early American philosophy, there is a person who deserves special attention, because the extraordinary ideas of this thinker greatly influenced the science of the 18th century. We are talking about Cadwallader Colden, who was an extremely active scientist. He published several treatises on physics, mathematics, ethics, and he studied the nature of mind, psyche, physiology, and the cosmos in which man lives. His cosmological doctrine was formed under the influence of the natural philosophy of Isaac Newton, and it was proof of the existence of philosophical discourse on different sides of the Atlantic Ocean. The purpose of the article is not to test the validity of the ideas of the early American philosopher, not to critically examine the doctrine through the prism of modern physics and cosmology, but to try to assess self-valuable philosophical ideas. The article demonstrates that Cadwallader Colden was a unique and individual philosopher, with original teachings in natural philosophy and cosmology. His views on the nature of physical phenomena were similar to mental phenomena; he carefully studied the properties of bodies and the nature of their impact. Using the ancient concept of the ether, he tried to explain the nature of gravity, which keeps the Planets of the Solar System in their orbits. In his understanding, it is impossible to imagine the process of transferring power from one agent to another without an intermediary, and he considered ether to be this intermediary. Since the theory of gravity is still a theory, a philosophical analysis of this phenomenon remains relevant, and an appeal to the cosmological experience of philosophers of the past will allow us to look at the problem from a different angle.*

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## Introduction

Cadwallader Colden contributed to the history of science in America, developed an original philosophical doctrine, with which both his supporters and critics agree. However, historically, there was no completely fair tendency either of a negative attitude or the darkening of his personality and activities. Such assessments of his merits are very common. Cadwallader Colden “was the most dismal physical scientist produced in colonial America” (Tucker, 2003: 100-101). As the researcher Allen C. Guelzo rightly asserts, Cadwallader Colden’s attitude, not as a historical person, but as a scientist, as a philosopher, has been and remains ambiguous. “On those terms, it has been easier to read about Colden than to read anything of what Colden wrote” (Guelzo, 2004: 843). One of the most famous historians of early American philosophy, Isaac Woodbridge Riley (1869-1933), in his book *American Philosophy: The Early Schools* (1907), devoted an entire chapter to the memory and teachings of Cadwallader Colden, in which he praised the scientist’s contribution. He placed him between deists and realists in the materialist section. “Cadwallader Colden (1688-1776), the first and foremost of the early American materialists, had a career as varied as his accomplishments... His system, in general, was in advance of the ordinary eighteenth century deism, anticipated to a degree the New England transcendentalism, and issued in a movement essentially modern, — the resolution of matter into the mechanics of energy. Colden is thus akin to Franklin, to Emerson and to Count Rumford” (Riley, 1907: 329, 335).

Another important biography of the thinker is *Cadwallader Colden, A Representative Eighteenth Century Official* (1906), the author of this monograph, researcher Alice M. Keys, made undoubtedly an original contribution not only to the history of the United States, but also to the history of early American philosophy. Setting herself the task of describing a little studied period, and from which we still far from understanding. She chose an interesting combination of historical and biographical methods; that is why they made it possible to explore the career of a prominent historical figure in a new way. Very well suited to the description of the life of the early American thinker John M. Dixon. In 2016, he published *The Enlightenment of Cadwallader Colden: Empire, Science, and Intellectual Culture in British New York* (2016), in which he demonstrates a new trend, his description of the political views of a philosopher is more an apology than a criticism. In his interpretation, Cadwallader Colden maintained a belief in hierarchy, especially in monarchy; he believed that royalty stabilized the powers of motley politicians (Dixon, 2016).

In 2002, for the first time, the unique collected works of Cadwallader Colden were published under the title *The Philosophical Writings of Cadwallader Colden* (2002). This book is the first collection of the main philosophical works of the early American thinker. Thanks to his diplomatic talents and political activities, now we can better understand the worldview of the indigenous people of North America. For example, his book, *A History of the Five Indian Peoples* (1727) was the first history of the Iroquois in English. Contributions like this to the development of ethnology have helped in the future to better understand the process of acculturation and to promote the growth of tolerance. As a philosopher, he was interested not only in historical events in the history of tribes, but also in their worldview, their culture and thinking. In *Philosophical ideas in the spiritual culture of the*

*indigenous peoples of North America* (2020), researcher Sergii Rudenko examines a similar phenomenon, when non-professional anthropologists and ethnographers of colonial America tried to preserve the heritage of the indigenous people. “With the advent of European writing and science, American Indians gained additional opportunities to preserve cultural heritage, so archaeologists, anthropologists, philologists, and other researchers gained new scope of work” (Rudenko & Sobolievskiy, 2020: 171). According to the editors Scott Pratt and John Ryder, this book was popular both in the colonies and in Europe (Pratt & Ryder, 2002). A feature of this anthology is that, in addition to the famous works of the philosopher: *Introduction to Philosophy, Principles of Action in Matter, Introduction to The History of the Five Indian Nations* — it contains a full correspondence with the early American philosopher of the Great Awakening period Samuel Johnson (1696–1772) on the concepts of matter and idea. In addition, for the first time published the ethical treatise *Principles of Morality* (1745), which is very important for researchers of the intellectual history of the colonial period.

### **Sources and factors of the formation of the philosophical worldview of the thinker**

In 1776, several historical events took place in North America. On July 2, thirteen colonies declared their independence from Great Britain, and two days later, Congress in Philadelphia passed the Declaration of Independence. Researcher of the biography of Cadwallader Colden, Seymour I. Schwartz, rightly asserts that against the background of these most important events in the history of the United States, the death of a famous doctor, scientist, botanist, ethnographer and philosopher, unwaveringly devoted to the British monarchy, was lost. “... a savant, who was deemed by colonial intellectuals as the most knowledgeable individual in all of the land. He shared interest and dialogue with three other colonial physicians, who were similarly notable for diverse contributions beyond the realm of medicine” (Schwartz, 2013).

The personality of Cadwallader Colden has been well studied by historians; it is known that he was born on February 7, 1688, in Ireland, although his parents were from Scotland. The father of the future philosopher, Alexander Colden, was a religious man who served in the church in Duns, Berwickshire, Scotland. He was interested in natural sciences and medicine, which played a significant role in the formation of his philosophical views. In 1705, Cadwallader Colden graduated with an MA from the University of Edinburgh. At the University, he studied the natural philosophy of Isaac Newton (1642-1727), and the new concept of the world order will be one of the important topics of his own philosophy.

At the invitation of relatives, in 1710, he arrived in America, where he took up a medical practice. In 1718, Colden left his practice for financial reasons and moved with his family to New York, where he received a lucrative position. As a surveyor-general of New York, he communicated a lot with Native Americans who lived nearby, and he was even accepted into the clan (Schwartz, 2013). In *Dictionary of Early American Philosophers* (2012), researcher John Shook writes that “In 1728 Colden and his family settled on an estate he called “Coldengham” in Ulster County, New York, where he was able to retreat from the political environment of New York City and study botany, mathematics, physics, medicine, and philosophy” (Shook, 2012: 232).

Cadwallader Colden’s bibliography is extensive, he left a legacy of extensive correspondence, and the main works of the philosopher are *The History of the Five Indian Nations Depending on the Province of New-York in America* (1727), *An Explication of the First Causes of Action in Matter and the Cause of Gravitation* (1745), *The Principles of Action in Matter, the Gravitation of Bodies, and the Motion of the Planets, Explained from*

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*those Principles* (1751). Cadwallader Colden's *History of the Five Indian Nations Depending on the Province of New-York in America*, published in 1727 (revised in 1747). This is one of the key intellectual books published in America in the 18<sup>th</sup> century. Philosopher discusses the laws, religion, customs, manners, and systems of government of the confederacy of tribes. If the first work was devoted to ethnology, then the thinker already showed a talent for philosophical reflection in the next remarkable book. This time was a test for two civilizations to build a kind of respectful relationship that would last for centuries. Researchers Denys Svyrydenko and Wiktor Mozgin argue sparingly in the article *The Soft Power of the State as a Dialectic of Contemporary Dependencies in the International Arena* (2019): "... the theoretical and practical premises of external policy have not fundamentally changed since the 17<sup>th</sup> century, since the goal of each entity is still to ensure security and achieve the best position in relation to others" (Svyrydenko & Mozgin, 2019: 90). From the book *History of the Five Indian Nations*, we learn how important it was for a philosopher to understand the culture of the Indians and maintain a tolerant relationship with them.

He was inactive correspondence with another prominent figure in early American philosophy — Benjamin Franklin (1706-1790), together they laid the foundations of the future American Philosophical Society. In 1811, the first volume of the *American Medical and Philosophical Register; Or, Annals of Medicine, Natural History, Agriculture and the Arts*, published an anonymous biographical article on Cadwallader Colden. "Though his principal attention after the year 1760 was necessarily directed from philosophical to political matters, yet he maintained with great punctuality his literary correspondence, particularly with Linnaeus of Upsal, Gronovius of Leyden, Drs. Porterfield and Whytte of Edinburgh, Dr. Fothergill and Mr. Collinson, F. R. S. of London. There were also several communications on mathematical and astronomical subjects between him and the earl of Macclesfield. With most of the eminent men of our own country, he held an almost uninterrupted epistolary correspondence. Among them, we may mention the names of Dr. Garden, Mr. J. Bartram, Dr. Douglass, Dr. John Bard, Dr. Samuel Bard, James Alexander, Esq. and Dr. Franklin" (Anonymous, 1811: 301). Here on the journal pages, we find confirmation that Cadwallader Colden stood at the origins of the American Philosophical Society. "With Dr. Franklin in particular, he was a constant and intimate correspondent, and they regularly communicated to each other their philosophical and physical discoveries, especially on electricity. In their letters are to be observed the first dawns of many of those discoveries which Dr. Franklin has communicated to the world and which so much astonished and benefited mankind. In a letter to one of his friends Dr. Franklin gives an account of the organization of the American Philosophical Society in which he mentions that Dr. Colden first suggested the idea and plan of that institution" (Anonymous, 1811: 301). It is obvious that a man like Cadwallader Colden, who was at the origins of the American Philosophical Society, wrote philosophical treatises and studied Aboriginal culture, is an important person in the history of early American philosophy.

### **Cosmological ideas in the natural philosophy of Cadwallader Colden**

As one of the founders (ideological inspirer) of the American Philosophical Society, Cadwallader Colden had to keep abreast of all the latest scientific discoveries. Here it is necessary to clarify that for the 18<sup>th</sup> century, the concept of philosophy was significantly different from its today's understanding. Thanks to the principle of historicism, it is necessary to study the phenomenon in its historical realities. Even the famous work of

Isaac Newton (1642–1727) *Mathematical Principles of Natural Philosophy* (*Philosophiæ Naturalis Principia Mathematica*) was devoted to the philosophical problems of nature's study. Philosophy in the era of the Enlightenment was associated mainly with education, erudition, encyclopedic knowledge. It was considered as an instrument of reason for penetrating the secrets of nature, which became not the scene of the Biblical story, but the workshop of the scientist. The Universe, Cosmos, Space, everything seemed subservient to the new research methods, and the mind was the only oracle. Here it is worth clarifying what we mean by the concept of progress in the history of philosophy and cosmology when we assert the contribution of this or that philosopher to science. The correct thesis was formulated by the researcher Vadim Tytarenko in the article *Non-Classical Approach to a History of Philosophy: Modern Status and Research Prospects* (2019). "Today, there are many theories of the historical-philosophical process, which can be divided into two main groups: those that consider the history of philosophy as a consolidated and unified process of the progressive development of philosophical ideas (Hegel's and Marx's theories of the historical-philosophical process) and those that suggest that the history of philosophy should be understood as a set of philosophical ideas that do not have a clear line of development, but which emerge and interact chaotically" (Tytarenko, 2019: 122). Most of the historians of philosophy from Ukraine and other post-Soviet countries prefer the former group of theories to the second.

An interesting experience of comprehending the philosophical heritage of Cadwallader Colden was carried out in the Soviet Union. In 1968-69, Soviet philosophers conducted a series of studies of early American intellectual culture. The interest was clearly political since it was necessary to know the forms of thinking of a potential adversary. In the history of the United States, an era was found that more or less suited Soviet ideology; it was the American Enlightenment with its struggle against the monarchy. Soviet ideology was built on the idea of a revolutionary struggle against tsarism for the sake of the communist ideal. Soviet philosophers in the 18<sup>th</sup> century in America saw this spark of revolutionary sentiment; it subtly legalized the research itself. The works of Benjamin Franklin, Thomas Payne, Thomas Jefferson, Cadwallader Colden, and others were translated into Russian. The compiler of the texts was Nikolai Goldberg. The author of the introductory article was Bernard Bykhovskiy. He started with such words: "This is about thinkers and public figures that the American people can rightfully be proud of. About the inspirers and ideologists of the anti-colonial revolution of the 18<sup>th</sup> century. About the people who brought the advanced ideas of their time" (Goldberg & Bykhovskiy, 1968: 5). Soviet philosophers argued the relevance of the study of early American philosophy in this way: "One of the most important tasks of Marxist philosophical historiography is to extract from the group of materialist thinkers, devoted to oblivion by the idealist history of philosophy, to restore their true views, not vulgarized and not distorted by opponents, and to understand their real role in the struggle between the two camps in philosophy and the significance of their ideas in the progress of social thoughts. Enlightenment philosophy is of particular interest in this respect because of its inextricable connection with advanced, revolutionary for their time, socio-political aspirations" (Goldberg & Bykhovskiy, 1968: 8-9). Translating and publishing American philosophy in the Soviet Union, Soviet philosophers assimilated the ideas of the West and expanded their own range of concepts. Researchers Sergii Rudenko and Vyacheslav Vilkov wrote about this well in their article *De-Stalinization of the Concept of the Nation in Soviet Marxism in the Second Half of the 20<sup>th</sup> Century* (2020). "... in the Soviet scientific literature depending on the political leaders and elites who headed the USSR, as well as the specifics

of the geopolitical processes of the 20<sup>th</sup> Century, the main ideological components of the official version of Marxism-Leninism, the precepts of the programs and strategies of the ruling Soviet Communist Party” (Rudenko & Vilkov, 2020: 161). Some works of the early American philosopher were translated into Russian, namely *The Principles of Action in Matter, the Gravitation of Bodies, and the Motion of the Planets, Explained from those Principles* (1751). He based his most important philosophical work on his treatise *An Explication of the First Causes of Action in Matter and the Cause of Gravitation* (1745). In one undated note, Cadwallader Colden noted that because the words “first causes” were misunderstood, he changed the title to “first principles.” Cadwallader Colden’s book gained notoriety mainly in Europe, but in America, Samuel Johnson (1696-1772), theologian and idealist philosopher, a follower of George Berkeley, drew attention to it. Soviet philosophers called this debate the struggle in American political philosophy between materialists and idealists. It is difficult to give an unambiguous answer to the question of Soviet philosophers about whether the early American philosopher was a materialist or an idealist. It is much easier to assert that he was an empiricist; all cognition begins with perception. Do not forget about the increased interest in astronomy, cosmology, and its history in the Soviet Union, especially against the backdrop of successes in the space program.

Before proceeding to the study of the force of attraction of planets, bodies, and their motion, it is necessary to understand the principles of action of the matter: “We have no knowledge of substances, or of any being, or of any thing, abstracted from the action of that thing or being. All our knowledge of things consists in the perception of the power, or force, or property, or manner of acting of that thing; that is, of the action of that thing on our senses, or of the effects of that thing” (Colden, 1751: 1). We find this quote at the very beginning of the treatise — CHAP. I. *Of the Principles of Action in Matter*. SECT. I. *Of the essential Properties and Differences of Things*. “For if any thing produce no alteration in our senses, it is impossible for us to know that any such thing exists: and every effect must be produced by some cause, or by some action” (Colden, 1751: 2). From the very beginning, he comes to an amazing conclusion. Through philosophical reflection, he deduces the principle of existence, which is in many ways similar to George Berkeley’s thesis *esse est percipi* (“To be is to be perceived”). If the logic of the European philosopher identified existence with the fact of perception, then the American philosopher formulates a similar principle in a different way. It is obvious to him that if a thing is not perceived, then it does not exist (existence is an alteration in senses). In fact, George Berkeley never wrote “*esse est percipi*,” the closest he ever came is in section 3 of his *Principles of Human Knowledge* (1710), where, of “unthinking things,” he says: “Their *esse is percipi*.” The full quotation looks like: “Their *esse is percipi*, nor is it possible they should have any existence out of the minds or thinking things which perceive them” (Berkeley, 1734: 31). For Cadwallader Colden, every thing we know is an agent. What this agent is, he explains as follows — the agent is determined by the acting force, since we know nothing about the thing, except for its action and the consequences of this action. Any agent, in order to exist, must have an impact on another thing, and for the impact, he must have his own ability or received power. However, since if an agent receives power from the outside, then he is not the original agent, and therefore is not suitable for studying first principles. The American philosopher analyzes only the initial agents, and those must continuously manifest their energy. Analyzing the content of the mind, the philosopher comes to the obvious answer, these are ideas or concepts, but they do not arise arbitrarily, but under the action of some thing that we perceive. For a thing to act on our perception, it must have qualities, must have some form and component parts. If a thing

consists of parts, then it is able to influence perception with different strengths depending on the number of parts. “And every thing which is conceived to be of Line quantity, is commonly called *matter*. But if the action of any thing does not excite in us any perception of its being of any quantity, or of any form or shape, or of its consisting of any parts, or that its force or action can be increased or lessened by the addition or taking away of part, that thing commonly goes under the name of an *immaterial* substance, or of *spirit*... The property, or quality of any thing, is nothing else but the action of that tiling...” (Colden, 1751: 3). Thus, the philosopher equally operates with two concepts: matter and spirit, which complicates his identification as a materialist or idealism. We emphasize that we did not set ourselves the task of solving this issue, but its mention is necessary. The essence of things, or substances, the philosopher believes, consists in the ability, or force, or mode of action of these things. In the SECT. II. *Of the force of Resisting, or Vis Inertiae of Sir Isaac Newton*, Cadwallader Colden develops his cosmology, based on a critical examination of the physical image of the world by Isaac Newton. The works of the latter, at one time, significantly changed the idea of humankind about outer space and our planet. His merits are so obvious that they are not worth mentioning, but in this study, we conduct a comparative analysis of some of the ideas in order to reveal the cosmological teachings of the early American philosopher. The most obvious knowledge given to us through the senses is knowledge about the quality of things that affect us due to some kind of resistance. The action of an object on the senses meets resistance; this is perception. The most obvious way to experience the juxtaposition of the outside world is tangible things. “This was first considered as a force or power by Sir *Isaac Newton*, under the Name of *vis inertiae*, or that power or force by which any thing resists or opposes any alteration of the state in which it is: and it is so generally observed, that it is commonly accounted a permanent essential property of all matter” (Colden, 1751: 5). This power, which both the early American philosopher and the European physicist wrote about, is sometimes more, sometimes less.

According to some researchers, there has never been a more daring claim to intellectual superiority in colonial America than Cadwallader Colden’s claim that he discovered the cause of gravity. For the enlighteners, Isaac Newton symbolized a world governed by precise laws that can always be double-checked, which are always predictable. Despite the exact laws that explain the effects of gravity, Isaac Newton was unable to answer a very important question: “I have not been able to discover the cause of those properties of gravity from [the observation of] phenomena... and I frame no hypotheses” (Newton et al., 1947: 547). According to Brooke Hindis, who was an associate professor of history at New York University, from 1948 to 1950 was research associate at the Institute of Early American History and Culture, Cadwallader Colden succeeded in what Isaac Newton did not: “What Newton could not discover “from phenomena” and would not seek by hypothesis, Cadwallader Colden would attempt: he would find the cause of gravitation. He started to put together his thoughts upon this great subject at least as early as 1743. In 1744, he circulated among a few friends in New York and Philadelphia a manuscript draft of his developing ideas. A small edition, still incomplete, was published in 1746 so that it could be offered to a wider circle of men of learning. It bore the title, *An Explication of the First Causes of Action in Matter; and of the Cause of Gravitation*” (Hindle, 1956: 459).

This force can increase if it is summed up with other forces or grow in proportion to the number of components. Cadwallader Colden gives an example with a ball, imagine a ball weighing twenty pounds. It will resist with more force than a ball, for example, one pound. This force has nothing to do with the concept of motion, because when moving, an

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action can be directed from one point to another, and then only in one direction. Therefore, if there were any kind of movement in the act of resistance or inertial force, it would resist movement only if their directions were opposite, and it resists movement in all directions equally. Resistance is a force that equally resists movement. It is quite customary for a person to attach the idea of moving to the idea of any action, but when we eat to imagine a kind of action without movement, we face difficulties. When a person thinks, he thus undoubtedly does something, which means that a philosopher concludes that thinking is an action, a kind of action: “Thinking is acting, or is a kind of action” (Colden, 1751: 7). However, thinking cannot be thought of as movement or resistance; it is a special action, significantly different from all other types of action. Therefore, in thinking, simple ideas arise from the action of simple forces, like resistance. In turn, complex ideas arise from the combination of the actions of several simple forces.

Cadwallader Colden interprets matter in a positive, dynamic sense. For him, the matter was not something that was defined only in terms of geometry and the theory of contamination, but as a fundamentally active source that could provide ample opportunities for describing and explaining the world. “Colden construed matter in positive, potent terms; the matter was not something that was identified principally in terms of geometry and resistance but as a causally active source that could provide a rich explanatory framework for describing and explaining the world. Although Colden stopped short of thoroughgoing materialism, he did go quite far in that direction” (Taliaferro, 2005).

A different sophism, nothing can act where it is not. From this maxima, the philosopher deduces the following idea, and nothing can communicate its action to another thing located at some distance from him. Power can only be communicated through something, through another thing. He describes the example that a person’s hand can move a ball, either by touching it or using a stick. “We perceive that the Sun communicates some kind of action to all the planets, which circulate round it, by which they are retained in their orbits, or gravitate towards it: So likewise we observe, that the earth communicates action to bodies at a distance from it, by which they gravitate towards the earth. There must then be some *medium*, some middle thing, by which the Sun and the Earth communicate the action to other things, at a distance from them. This cannot be by an emanation of some kind of virtue, as some imagine; because any kind of emanation supposes motion from the thing which emits the virtue to the thing on which the virtue exerts its force; but it is impossible to conceive that any motion from a thing, can cause a motion to that thing” (Colden, 1751: 17). However, it doubtfully that a movement emanating from one thing can cause movement to another thing. If, in this case, we want to investigate the causes that cause some phenomena, or phenomena, of nature, then it becomes necessary to reveal the nature of this medium through which things communicate their action at a distance. Isaac Newton and other philosophers have called it ether, and everyone admits this kind of thing exists.

## Conclusion

Cadwallader Colden was a prominent and undeservedly forgotten early American philosopher of the Enlightenment. A possible reason why his personality remains on the sidelines is his political beliefs; that is why his biography and bibliography were lost against the backdrop of the dramatic events of the American Revolution. His contributions to natural sciences and medicine are indisputable, but the question remains about his legacy in the fields of cosmology and philosophy. The article describes the main key works of the philosopher, focuses on the facts of the biography that influenced the formation of the philosophical

worldview. The article also analyzes his epistemological, ontological and cosmological ideas, which were born in polemics with the outstanding minds of the 18<sup>th</sup> century on different sides of the Atlantic Ocean. It was in the philosophical discourse that new cosmological knowledge was born, which filled the scientific image of the world with new ideas. In his writings, Cadwallader Colden held a parallel between thinking and the world, demonstrated the similar nature of physical and mental phenomena, studied the nature of resistance, force, described by Isaac Newton. With the help of philosophical terms, originally from antiquity, he tried to answer questions that remain unanswered today, which produce more and more new hypotheses. With the help of ether, he explained the reason why the Sun holds the Planets. Since the gravitational interaction is still not completely studied, the philosophical understanding of this phenomenon does not lose its relevance.

## References

- Anonymous (1811) Biographical Sketch of the late Honorable Cadwallader Colden, formerly Lieutenant-Governor of New-York, with an account of his writings. *American Medical and Philosophical Register, Or, Annals of Medicine, Natural History, Agriculture and the Arts*. Volume 1, 297-303.
- Berkeley, G. (1734) *A treatise concerning the principles of human knowledge: Wherein the chief causes of error and difficulty in the sciences, with the grounds of scepticism, atheism, and irreligion, are inquired into. First printed in the year 1710. To which are added Three dialogues between Hylas and Philonous, in opposition to skeptics and atheists. First printed in the year 1713*. London: Printed for J. Tonson.
- Colden, C. (1727) *The history of the five Indian nations depending on the province of New-York in America*. New York: Printed and sold by William Bradford in New York.
- Colden, C. (1745) *An explication of the first causes of action in matter; and, of the cause of gravitation*. New York: Printed by James Parker.
- Colden, C. (1751) *The principles of action in matter; the gravitation of bodies, and the motion of the planets, explained from those principles. By Cadwallader Colden, Esq.* London: printed for R. Dodsley.
- Colden, C. (1918) *The letters and papers of Cadwallader Colden ... 1711-[1775]*. New York: Printed for the New York historical society.
- Dixon, J.M. (2016) *The Enlightenment of Cadwallader Golden: Empire, Science, and Intellectual Culture in British New York*. Ithaca, N.Y., London: Cornell University Press.
- Goldberg, N.M., and Bykhovskiy, B.E. (1968) *American enlighteners. Selected works in two volumes*. Moscow: "Mysl."
- Guelzo, A.C. (2004) *Transactions of the Charles S. Peirce Society*, Volume 40, Issue 4, 843-846.
- Hindle, B. (1956) Cadwallader Colden's Extension of the Newtonian Principles. *The William and Mary Quarterly*, Volume 13, Issue 4, 460-475. <https://doi.org/10.2307/1917018>
- Newton, I., Motte, A., Cajori, F., and Crawford, R. T. (1947) *Sir Isaac Newton's Mathematical principles of natural philosophy and his System of the world*. Berkeley, California: University of California Press.
- Pratt, S. L. and Ryder, J. (2002) *The Philosophical Writings of Cadwallader Colden*. Amherst, New York: Humanity Books.
- Riley, I. W. (1907) *American philosophy: the early schools*. New York: Dodd, Mead.

- Rudenko, S., and Vilkov, V. (2020) De-Stalinization of the Concept of the Nation in Soviet Marxism in the Second Half of the 20<sup>th</sup> Century. *Politické Vedy*. Volume 23, Issue 4, 160-195. <https://doi.org/10.24040/politickevedy.2020.23.4.160-195>
- Rudenko, S., and Sobolievskiy, Y. (2020) Philosophical ideas in spiritual culture of the indigenous peoples of North America. *Anthropological Measurements of Philosophical Research*, Volume 18, 168-182. <https://doi.org/10.15802/ampr.v0i18.221428>
- Schwartz, S.I. (2013) *Cadwallader Colden: A biography*. Amherst, New York: Humanity Books, an imprint of Prometheus Books.
- Shook, J. R. (2012) *The dictionary of early American philosophers*. New York: Continuum.
- Svyrydenko, D., and Mozgin W. (2019) The Soft Power of the State as a Dialectic of Contemporary Dependencies in the International Arena. *Ukrainian Policymaker*, Volume 5, 89-97. <https://doi.org/10.29202/up/5/10>
- Taliaferro, C. (2005) The Ascendancy of Rules of Evidence in Early Modern Philosophy of Religion. In *Evidence and Faith: Philosophy and Religion since the Seventeenth Century* (The Evolution of Modern Philosophy, pp. 110-159). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511610370.004
- Tucker, T. (2003). *Benjamin Franklin and His Electric Kite Hoax*. New York: Public Affairs.
- Tytarenko, V. (2019) Non-Classical Approach to a History of Philosophy: Modern Status and Research Prospects. *Future Human Image*, Volume 12, 121-128. <https://doi.org/10.29202/fhi/12/11>