

# **$E = mc^2(-L)$ ：犧牲的哲學與能量的平衡與人類文明的代價**

$E = mc^2(-L)$ : The Philosophy of Sacrifice, the Balance of Energy, and the Cost of Human Civilization

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## **摘要 Abstract**

本文以愛因斯坦的質能等價原理  $E = mc^2$  為基礎，延伸出概念式  $E = mc^2(-L)$ ，其中「-L」代表生命（Life）與犧牲（Loss）所隱含的無形能量損耗。這個符號不僅指出物質與能量轉換過程中被忽略的“生命代價”，同時也反映人類社會在面對全球性災難（例如 Covid-19 疫情）時所經歷的「能量不守恒」現象——即在宏觀物理上能量總量似乎恆定，但在社會與倫理層面卻出現不可逆的損失。

This paper extends Einstein's mass–energy equivalence principle,  $E = mc^2$ , into a conceptual form  $E = mc^2(-L)$ , where “-L” represents the invisible energetic loss associated with Life and Loss. The symbol highlights the often-overlooked “cost of life” in processes of material–energy transformation, while reflecting the phenomenon of “non-

conservation of energy” within human society—where the total physical energy may appear constant, yet irreversible losses occur on social, ethical, and emotional levels, particularly during global crises such as the Covid-19 pandemic.

## 主體內容 Main Content

根據愛因斯坦的質能等價公式：

$$E = mc^2$$

能量  $E$  等於質量  $m$  乘以光速  $c$  的平方，其中  $c \approx 3.00 \times 10^8$  m/s。

According to Einstein’s mass–energy equivalence formula:

$$E = mc^2,$$

energy ( $E$ ) equals mass ( $m$ ) multiplied by the square of the speed of light ( $c \approx 3.00 \times 10^8$  m/s).

若假設 147 噸的電子質量（約等同於全球 700 萬具人體火化後的總質量）能完全轉換為能量，則能量輸出為：

$$E = 147,000 \text{ kg} \times (3.00 \times 10^8)^2 \approx 1.323 \times 10^{21} \text{ J}$$

If 147 tons of matter (roughly equivalent to the combined mass of 7 million human bodies after cremation) were fully converted into energy, the resulting output would be:

$$E = 147,000 \text{ kg} \times (3.00 \times 10^8)^2 \approx 1.323 \times 10^{21} \text{ J}.$$

這是一個極其龐大的理論值，相當於數百萬顆氫彈同時引爆的總能量。若將此作為象徵性推演，這代表在疫情中，全球數百萬條生命消逝所釋放的「潛在能量」——這些能量以悲劇的形式被人類文明吸收，成為集體命運的震盪。

This enormous theoretical value equals the combined detonation energy of millions of hydrogen bombs. Symbolically, it represents the potential energy released through the loss of millions of lives during the pandemic—energy absorbed by human civilization in the form of tragedy, resonating as a vibration within our collective destiny.

**(-L) 的社會詮釋：生命與秩序的代價**

## **The Social Interpretation of (-L): The Cost of Life and Order**

在 Covid-19 疫情期間，根據世界衛生組織（WHO）的防疫規範，多數國家規定遺體須於 1–2 天內火化。這一政策雖有助於防止病原擴散，卻也象徵著人類在極短時間內「強制完成」生命能量的釋放。

During the Covid-19 pandemic, most countries—following WHO guidelines—required cremation of bodies within one or two days. While effective in preventing contagion, this policy symbolized a forced and rapid release of life energy.

約 700 萬具遺體火化的過程，不僅代表物質轉化為能量的實際行為，也揭示出人類文明在巨大犧牲下的倫理與情感真空。每一具遺體背後，都是一個家庭的崩解、一段關係的終結、一種信念的動搖。

The cremation of roughly 7 million bodies was not only a literal process of material-to-energy conversion—it also revealed an ethical and emotional vacuum in human civilization. Behind every body lay a collapsed family, a broken bond, and a shaken faith.

然而，這種犧牲並非僅限於生命層面。

-L 同時涵蓋了：

- 有價的犧牲：經濟停擺、交通封鎖、產業崩解、奧運延期、旅遊凍結。

- 無價的犧牲：生命的消逝、社交隔絕、文化斷層、心理創傷與孤立。

Yet this sacrifice extended far beyond biological life.

“-L” encompasses both tangible and intangible losses:

- Tangible: economic shutdowns, transport bans, industrial collapse, Olympic postponement, and halted tourism.

- Intangible: death, social isolation, cultural disconnection, psychological trauma, and existential loneliness.

這些犧牲交疊，使整個人類社會出現「能量荒亂」的現象。雖然宏觀的能量守恆似乎依然成立，但文明的內部卻出現了精神層面的“熵增”——秩序瓦解、信任崩塌、價值失衡。

The accumulation of these sacrifices created a state of energetic turbulence in human society. While physical

energy conservation remained intact, entropy increased within the moral and psychological fabric of civilization—disorder rose, trust eroded, and values lost balance.

## 不可測的社會變因：混亂的副作用

### **Unquantifiable Social Variables: The Side Effects of Chaos**

各國的鎖國與封城措施雖防止疫情蔓延，卻同時導致了零星的犯罪率上升、家庭暴力案件激增、貧困與失業加劇等現象。這些社會異常屬於無法以能量方程式計算的「不可測變因」。

Lockdowns and border closures, while curbing infection, also led to rising crime rates, domestic violence, poverty, and unemployment. These social anomalies represent unquantifiable variables that no energy equation can account for.

這些無法量化的混亂正是 (-L) 的核心意涵之一：

能量在文明中並非單向轉換，而會因人類意識、情感與社會結構的扭曲而消散。人類越試圖以理性與技術控管世界，越容易忽略那些在秩序邊緣被犧牲的「生命能量」。

Such unmeasurable chaos defines the essence of “(-L)”:

Energy within civilization does not transform linearly; it dissipates through distortions of human consciousness, emotion, and social structure. The more humanity tries to control the world through logic and technology, the more it sacrifices the “life energy” existing at the edges of order.

## 案例分析：東京奧運的延後效應

### Case Study: The Delayed Tokyo Olympics

以東京奧運（原定2020年，延後至2021年舉行）為例，這段延期象徵全球疫情下「文明秩序的暫停」。

- 經濟層面：日本政府承受了超過 6400 億日圓 的直接損失；
- 社會層面：無數運動員、觀眾與志工的努力與期望被迫延宕；
- 精神層面：人類象徵性慶典的能量流動被中斷，世界陷入集體焦慮與空白。

The Tokyo Olympics, originally scheduled for 2020 but postponed to 2021, epitomized the suspension of civilizational order under the pandemic.

- Economic dimension: Japan suffered direct losses exceeding 640 billion yen.
- Social dimension: countless athletes, spectators, and volunteers had their hopes deferred.
- Spiritual dimension: the energetic flow of humanity's grand celebration was disrupted, leaving the world in a state of collective anxiety and void.

奧運的延期，不僅是一場體育賽事的延宕，更是一個文明能量被迫壓抑與轉移的事件。這些可量化與不可量化的犧牲，正是  $E = mc^2(-L)$  的具體實例：

即使沒有爆炸或核反應，文明的能量依然以另一種形式釋放——那是心理壓力、失落、與對未來的不確定感的總和。



The postponement was more than a delayed sporting event—it was a forced redirection of civilizational energy. Both measurable and immeasurable sacrifices illustrate  $E = mc^2$  (-L) in practice: even without explosions or nuclear reactions, energy was released through psychological stress, grief, and uncertainty about the future.

## 人類文明的能量守恆與失衡

### **The Conservation and Disequilibrium of Civilizational Energy**

如果說傳統物理學講求能量守恆，那麼人類歷史的進程則不斷演示著「能量的倫理失衡」。

每一次文明的進步，幾乎都以某種形式的犧牲為代價：古代的奴隸勞動、工業革命的環境破壞、戰爭的死亡、乃至今日疫情下的隔離與恐懼。

While classical physics upholds energy conservation, human history continually demonstrates ethical disequilibrium in its energy exchanges. Every stage of progress has demanded sacrifice—ancient slavery, industrial pollution, war casualties, and modern isolation and fear.

這些“代價”並非純粹的物理損失，而是「存在狀態」的耗損。

這正是 (-L) 的哲學含義：

當能量轉化為文明成果時，生命總有一部分被犧牲、被燃燒、被化為不可見的光與灰燼。

These “costs” are not merely physical losses but depletions of existence itself. This defines the philosophical meaning of “(-L)”: whenever energy becomes a product of civilization, part of life is sacrificed, burned, or transmuted into unseen light and ashes.

## **結論 Conclusion**

$E = mc^2(-L)$  不僅是一個物理延伸公式，更是一種文明哲學的隱喻。

它提醒我們：

當人類面對災難、戰爭或疾病時，能量的轉換不僅發生於物質層面，也存在於情感、信仰與秩序的流動之中。

每一次犧牲——無論是生命的消逝、經濟的崩壞，或社會運作的停滯——都構成了文明能量的一部分。

唯有當我們意識到「犧牲也是能量的一環」，人類才能在下一個時代真正理解平衡的物理學與倫理學共通法則。

$E = mc^2(-L)$  is not merely an extension of physics but a metaphor for civilization itself.

It reminds us that when humanity confronts catastrophe, war, or disease, energy conversion occurs not only in the physical realm but also through the movements of emotion, faith, and order.

Every act of sacrifice—whether life lost, economy collapsed, or society suspended—constitutes a fragment of civilization's total energy.

Only by realizing that sacrifice itself is part of energy can humanity truly comprehend the shared law of equilibrium between physics and ethics.

## 後記 Postscript

我以此論文重新定義量子力學。  
不再以宏觀或微觀的角度切入，  
而是以直觀的角度理解宇宙的本質。  
因為在那當下，甚至此時此刻的我——  
既是觀察者，也是事件的其中一員。

I redefine quantum mechanics through this paper—  
not from a macroscopic nor microscopic perspective,  
but from an intuitive understanding of the universe's  
essence.

For in that very moment, even here and now,  
I am both the observer and the observed.

這樣的存在狀態，使觀察不再是分離的行為，  
而是一種參與、一種共振。  
量子行為因此不再僅屬於粒子或波的層面，

而成為意識與現實共構的「能量對話」。

Such a state of existence transforms observation from detachment to participation and resonance.

Quantum behavior thus belongs not only to particles or waves,

but becomes an energetic dialogue between consciousness and reality.

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