BAUHINIA

Contents

Editor's Note

It is with a mixture of pleasure and apprehension that we present the inaugural edition of Bauhinia. It is indeed pleasing that our academic community and students now have an avenue by which they can see published the fruits of their intellectual labors, including IB DP Extended Essays, research conducted at the Needham Research Institute scholar's retreat in Cambridge, and a variety of papers produced by the ISF Academy *Shuyuan* and other academic departments.

However, the first of anything, especially an academic journal, gives rise to apprehension, for it is in the absence of precedent and expectation that it becomes incumbent on us to set the standards that will outlast our efforts. We may have failed already. Yet, to fail in the attempt garners far greater satisfaction than to attempt nothing.

High school academic journals are rare, because some may consider teenagers bereft of the kind of intellectual maturity required to do and publish research. Others may believe that high school education does not lend itself to the kind of academic activity more commonly associated with universities. Such a publication may also be considered an extravagance, given limited budgets and available expertise. The existence of this first volume shows that we reject these assumptions outright.

Our school is an academic community where ideas are generated, presented, discussed, accepted, rejected, and assimilated. Therefore, creating an opportunity for our students to demonstrate their developing scholarship and take part in an academic discourse is worth every effort we can expend.

And thus, apprehension gives way to confidence and optimism for a publication that, we hope, will not only grow in reputation, but will also become a home where the true joy of scholarship, so native to the intellectual curiosity that characterizes human endeavor, can be celebrated.

Chris Coetzee

弘立書院《紫荊》雜誌創刊號的出版難免給我們帶來複雜的心情。一方面我們有著創辦者的喜悅，但另一方面又有些戰戰兢兢。無論如何，隨著《紫荊》的誕生，我們的學習社群從此便有了一個展示自己學術成果的正式渠道，包括國際文憑預科課程的拓展論文、學生在劍橋大學李約瑟研究中心所做的研究，以及在［書院］及其他學術部門裡所寫的文章等。

我們忐忑的心情可以用一句中國俗語來概括：萬事開頭難。因為在中學辦學術研究雜誌，此前無前人的軌跡可以依循，唯有自己開創一些標準，好讓我們的校刊開花結果。我們也許已經走了一些彎路，但自古成功在嘗試。犯一些錯誤，卻可以推動一件有意義事情的展開，總比甚麼都不嘗試好。

中學的學術評論雜誌世上鮮有，因為很多人都以為中學生並無足夠的成熟度去進行研究和發表研究結果。也有另外一些人士認為，中學教育有別於大學，在這個階段裡進行研究活動不太合適。或許更有人認為，由中學來辦這一類雜誌，無論經費上或是專業程度上都難以保障，恐有浪費之嫌。但是我們《紫荊》的創刊號證明了這些憂慮和批評都是不正確的。

我們學校的學習社群裡會產生很多不同的理念。這些理念會在師生中分享、傳播和討論。其後它們有可能被大家拒絕，也有可能被廣泛吸收和接受，成為社群知識的一部分。因此，給予學生一個能展示他們成長階段裡的學術成就以及進行交流的平台，是一個非常有意義的舉措。

正因如此，我們當初的忐忑感慢慢轉化為我們的一份自信。我們相信，《紫荊》不但會成為一個有份量的學術雜誌，更會成為一種分享和求知的興奮，和一片滿足我們與生俱來好奇心的共有天地。

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THE ISF SHUYUAN PROGRAMME

The Generals' Putsch of 1961 and the Algerian War

Jin Chow

ABSTRACT

This paper investigates a short but symbolic event in the course of the 1954-62 Algerian War of Independence from France – the Generals' Putsch in Algeria of April 1961. The question explored throughout is: To what extent did the Generals' Putsch of 1961 pose a threat to De Gaulle's policies in Algeria? The Generals' Putsch of April 1961, which took place in various cities in Algeria, is often overlooked in the context of the Algerian War of Independence because of its brief duration and obvious failure. However, this putsch was important because it symbolizes yet another triumph of the wave of decolonization over antiquated imperialism. In the examination of different aspects of the putsch, including its historical and political context, organizers, planning, execution, and aftermath, various sources were used. Information was gathered from key sources, including *A Savage War of Peace* by renowned British historian of modern France, Alistair Horne, several of Charles de Gaulle's key speeches of 1959 and 1962, Gillo Pontecorvo's influential film *La Bataille D'Alger*, and the French governmental referendum of 1961. Sources in both English and French were analyzed in order to gain a more critical understanding of the event. Through careful analysis of various aspects of the putsch, one may understand how careless planning and hasty execution, coupled with unbridgeable internal divisions among the putschists, completely overrode any advantage that the organizers may have had and minimized the threat of the putsch. Therefore, this paper can conclude that the Generals' Putsch had a very small chance of success. Though the putsch posed a minimal threat to de Gaulle's policies concerning Algerian national self-determination, we must recognize its value as a symbolic capitulation to the inevitable tide of decolonization.

1. Introduction

The Algerian War of Independence took place from 1954-1962, when the *Front de Libération Nationale* (FLN) of Algeria fought against France. At the beginning of the war, France engaged in combat primarily to maintain colonial control over Algeria. However, this largely imperialistic mentality took a turn in direction as Charles de Gaulle came into power in 1958. Throughout the world at that time, there was a general trend of colonies gaining independence, and as British Prime Minister Harold Macmillan aptly described in his 'Wind of Change' speech given in Africa, 1960, "whether we like it or not, this growth of national consciousness is a political fact. We must all accept it as a fact, and our national policies must take account of it" (Macmillan). In the case of the French empire in Africa, the general realization that colonial maintenance was increasingly costly and inefficient led to a wave of decolonization, which began with Morocco's independence in February 1956, Tunisia's in March 1956 (Chamberlain 158) and Gabon's, Cameroon's, and Chad's in August 1960 (Chamberlain 166).

As the last remaining Maghreb country still colonized, Algeria demanded independence. On 16 September 1959, de Gaulle gave a speech stating that a French-Algerian colonial relationship was no longer desirable (Hitchens) and that "national self-determination will be, from today onwards, proclaimed" (*L'autodétermination*). This choice was later substantiated by a referendum in1961, in which de Gaulle's new policy of national self-determination received support from the majority in both France and Algeria ("*Référendum*"). This enraged conservative French army generals as well as the traditionalist *Pieds Noirs* (French settlers in Algeria), who felt that their efforts and status would be undermined if Algeria achieved independence. It is this general animosity and tension between de Gaulle's larger diplomatic policies and the conservatives' interests that gave rise to the particular event that this paper will examine: the Generals' Putsch of April, 1961, and the extent to which it threatened de Gaulle's policies of ending colonial rule in Algeria.

Four retired French military generals, enraged by de Gaulle's abandonment of France's long-held imperial interests, staged a coup against de Gaulle in Algeria in an attempt to prevent Algerian independence. If they had succeeded and had come to power, France would have struggled against the tide of decolonization taking place throughout Africa and Asia. The failure of this putsch is therefore important and worth examining.

This paper also investigates the putsch's planning and execution, the relationship between its coordinators, and the ulterior motives of those involved in order to shed light on the degree of its threat. This fascinating yet seldom reported-on event is worthy of investigation because the putsch's failure exposes the divisions within the larger French community of the time on the Algerian issue and also sheds light on the futility of running against the tide of decolonization.

2. The Putsch as a Violent Reaction to de Gaulle

De Gaulle's speech on Algerian national self-determination in September 1959 caused violent upheaval. He suggested that there were three possible "formulae" for achieving self-determination, namely "independence, Gallicisation, and the association of an Algerian-governed Algeria in close union with France" ("*L'auto-détermination*"). Increasing talk of "giving Algeria the home rule" (Bailard) enraged the French public.

In a sense, it was inevitable to turn towards decolonization because of the relinquishment of so many other African French colonies as well as the genuine ineffectiveness of colonial control. However, had de Gaulle proposed this from the beginning, public outrage would have been minimized; the fact that he abandoned promises made previously enraged many. Renowned British historian, Alistair Horne, cites examples of broken promises: "Simultaneous communiqués were published from both Paris and Tunis, announcing forthcoming bilateral peace talks at Evian between the French government and the FLN, just what, a year ago, de Gaulle had promised Delouvrier and Challe he would never entertain" (Horne, A Savage War 442). This caused a widespread sentiment of betrayal among the generals and elites in the French political circle as "they felt they were about to be robbed of their [military] victory and, worse, their honour" as they fail "to fulfil the promises they had made to French Algerians and Muslims that Algeria would remain French" (Martin 53-4).

This anger and frustration mounted and resulted in the "week of barricades" in Algiers in 1960. "There was a shoot-up in which fourteen French gendarmes were killed, and extremist *Pieds Noirs* dug themselves in behind barricades. Some of the elite para[trooper] units showed signs of fraternizing with the *Pieds Noirs*; it looked as if France might be facing civil war" (Horne, The French Army 80-1). In addition, there was a total of "123 wounded as Ortiz's (a disgruntled army officer) armed protesters gathered *en masse*, erected barricades and aimed volley after volley at their advancing ranks before the gendarmes could return fire" (Connelly 222). As the week of barricades preceded the Generals' Putsch, one can see the seething discontent that had accumulated within the military. The week of barricades was but one outbreak of violence that illustrates the conflict between conservative military imperialists and de Gaulle's supporters. In fact, one may suggest that this social context did indeed pose a threat because of the people's deeply rooted hatred. The four generals who incited the revolt were not just power-hungry military men; they felt that relinquishing Algeria threatened France's stature as a great imperial power.

3. De Gaulle's Mighty Opponents

This hatred was manifest in the four powerful putschists: Raoul Salan, Edmond Jouhaud, André Zeller, and Maurice Challe, all of whom were retired generals close to de Gaulle. They united to stage the coup in Algiers in 1961 in an attempt to overthrow de Gaulle. De Gaulle once ironically remarked: "It's a very strange characteristic of my life that I have always been obliged to fight against those who have been my friends" (Pervillé 436).

General Salan was a retired commander-in-chief of the French army who was based in Madrid, where he set up a congregation of "exiled right wingers" and was very influential in the European conservative political sphere (Horne, A Savage War 438). Salan was exiled from Algeria to Madrid prior to the putsch for his disrespect of military code and his hatred of de Gaulle. His frustration was further aggravated by his exile and loss of status. He also believed that without his help, de Gaulle would never have come to power in 1958 (Horne, A Savage War 419).

Unlike any of the other generals, Algerian-born air force commander, Edmond Jouhaud, "was the only *Pied Noir* among the dissident leaders" (Berstein 49). He was often described by his peers as a "burly man whose face bespoke ill-temper." Although he had neither the popularity nor the intellect of some of the other generals, he was the most ardent supporter of the *Algérie française* because of his ethnic origins (Pervillé 120). According to Alistair Horne, Jouhaud famously declared: "You can wrench a man away from his country, but you can never wrench the country away from the heart of the man" (Horne, A Savage War 420).

André Zeller, on the other hand, "was the former chief of staff of French ground forces" (Connelly 237). He was in retirement in Paris and was a well-known supporter of the *Algérie française*. He was, ironically, "selected by de Gaulle as being reliably loyal to himself to replace officers purged from Algeria" (Connelly 239). Therefore, the fact that such a powerful and trusted general rose up against de Gaulle caused much surprise and panic in the French political circle.

The last general, Maurice Challe, "was one of the most esteemed and honourable officers in the French Army. He had come closer than any to winning the war on the ground and he promised the Muslim levies (*harkis*) that France would never abandon them" (Horne, The French Army *81)*. What hurt Challe the most was that, although French Muslim loyalists all voted to retain their French citizenship when they enlisted to be part of Challe's army (Deroo), there were nevertheless "mass desertions" (Watson 126) after 1959.

Maurice Challe was the most rallying leader of the putsch. His Challe Offensive, a military strategy used to crush the FLN and the *Armée de Libération Nationale* (ALN) had been very close to success when de Gaulle announced his new policy and the whole operation was forced to shut down. "[Through the Challe Plan of 1959], 1600 fighters of the FLN had been killed, 460 captured, and large quantities of ammunition seized…50% of ALN manpower and 40% of its weaponry" (Watson 334). Therefore, for Challe, much more than his personal honor was at stake; his conscience would never have allowed him to abandon thousands of loyal Muslim lives.

In fact, the beginning of bilateral peace talks drove Challe to side with the putschists. He confided in his diary in 1960 that "from this moment I shall begin to think deeply about the sense of my remaining in the army" (Horne, A Savage War 442). The announcement of the popular Challe's retirement caused a far

greater stir within the armed forces (Horne, A Savage War 442). The fact that he finally decided to rebel against the very institution in which he served sheds light on the alarm that the putsch caused in France.

Moreover, one of the putschists, General Salan, worked with other officers, including Pierre Lagaillarde and Jean-Jacques Susini (Horne, The French Army 82), and simultaneously established the terrorist organisation known as *Organisation Armée Secrète* (OAS) in February 1961 (Naylor 25). Therefore, many see the Generals' Putsch in April as an act associated with the OAS. After the putsch failed and de Gaulle began the peace talks at Evian, the OAS "intensified its series of terrorist actions in Algeria aimed at the Muslim population with the objective of ruining the agreement" (Alexander 151). These terrorist attacks included attempted assassinations of de Gaulle and bombings of FLN bases (Wall 35). After the Generals' Putsch shattered, the failed putschists "went underground to continue their struggle in the ranks of the OAS, which was thereby strengthened" (Berstein 50). Therefore, even though the putsch itself failed, its legacy and repercussions inspired the putschists to vent their anger through another, more destructive channel – the OAS.

4. Internal Divisions and Disunity

The greatest weakness of the movement was that the leaders were in conflict with those in lower military ranks, and even the four generals were divided in their personal agenda. This ultimately was another Achilles' heel of the movement. Vinen sagely remarks that "there was no dearth of latent divisions within the ranks of the putschists" (90).

First of all, General Salan was at odds with a young, zealous *Pied Noir*, Lagaillarde, who, in addition to organizing the OAS later in February 1962, was also an important coordinator of the putsch. "Salan was hardly on speaking terms with Lagaillarde, and determined to exclude him" (Horne, A Savage War 440). Also, even though the putsch officially began on 20 April in Algeria, Lagaillarde remained in Madrid, which was symptomatic of how *Pieds Noirs* were left on the sidelines (Connelly 238).

Also, there were widespread disagreements over the actual military strategy of the putsch. "Challe was at odds with his fellow conspirators as to whether the army should move simultaneously in France too; Challe argued for Algeria only" (Berstein 447). The generals' military background backfired, causing them to dispute the best way to bring the French government to its knees.

Yet, an even more important problem was the conflicting agendas of the four main leaders. Challe's main motive was the "call of honour and conscience that drove him to an act that in his heart he half felt was doomed from the start" (Watson 403). He was torn when he realized that his loyal Muslim *harkis* felt "abandoned and neglected by France" (Costelle). However, for Algerian-born Jouhaud, he was "dedicated to the *Pieds Noirs*" (Horne, A Savage War 443) in a way that was not shared by the others, and his main goal was to protect the interests of this group. In contrast, General Salan, who had been involved in the failed 1958 coup, felt a "sense of personal aggrievement and betrayal

against de Gaulle" (Naylor 42) because this previous 1958 putsch brought de Gaulle back to power. These sentiments were not shared by Challe, who was more concerned with his military success. In fact, one dividing argument was the question of overthrowing de Gaulle, as "Challe continued to insist that it was not his design to bring down the de Gaulle government, but merely 'to change its policy'. This moderation was certainly not shared by his fellow plotters, for whom it was essential that de Gaulle should be removed" (Alexander 12).

Furthermore, while many historians stress the fact that the leaders of the putsch were reputable and powerful military men, other evidence suggests that the true impetus for the movement was actually provided by soldiers of a lower rank. "The lieutenants were found to be working upon the captains, and captains upon the majors and colonels; it was they, not the generals, who provided the true dynamos of revolt. This was later to prove the Achilles' heel of the whole movement" (Horne, A Savage War 437). This actually introduced potential conflicts and divisions within the military and further challenged effective coordination.

One prime example of this was when "Challe found an order, bearing his own signature, but apparently put out by the 1st REP (Foreign Parachute Regiment), postponing the operation for no very good reason" (Pervillé 448). This illustrates poor coordination and shows that the troops arriving from France worked quite independently of the generals.

5. Hasty Planning and Careless Execution

When the putsch was scheduled to begin on 20 April, 1961, the four main leaders were not even in Algeria. This is quite telling of the lack of planning and coordination between the putschists. "The first move was for the four leaders – Challe, Jouhaud, Salan and Zeller – to reach Algeria by various means and set up the standard of revolt there" (Watson 444). The generals planned that after their arrival, their most loyal units, including the 1st REP would take control and seize the most important government buildings and office centres in Algiers. Then, they hoped that the rest of the population of rebels would follow suit. However, what was expected diverged greatly from reality. Challe declared that "all but one sector commander had declared himself for us…none of the support we envisioned was fixed in practice. We were going to have a sad experience here" (Horne, A Savage War 268). One example of this careless coordination was when the putschists neglected to consider that in the region of Oranie, "where General Pouilly was hostile, his deputy, General Lhermitte, on whose support they vitally counted, would be away on leave" (Horne, A Savage War 444). Failure to consider this important information jeopardized the putsch's chances of success.

Furthermore, there were various leaks of information that percolated through France to those who were unsympathetic to the putsch. On the night of 20 April, Captain Sergent led the 1st REP, "the spearhead of the whole operation, and headed to Algiers shortly after midnight" (Horne, A Savage War 448). The putschists were also careless in allowing Gaullist General Simon to receive leaked information of the paratroopers' landing. Simon then

telephoned "to warn Morin at the *Palais d'Ete* that evening that 'something was afoot'" (Horne, A Savage War 448*)*. This eliminated the putsch's element of surprise. This leakage of information was further facilitated by Godard, "the master intelligence operator, [who], in the excitement or arriving, had mislaid in a public corridor his briefcase containing all details of the putsch" (Horne, A Savage War 448).

To make matters worse, although the putschists were successful in seizing the *Palais d'Eté* and thus arresting the Minister of Public Works, Robert Buron, "with remarkable incompetence, [the generals] neglected to cut all the telephone lines from the *Palais d'Eté*, so that Morin managed to call Paris" (Berstein 34). Communication between de Gaulle and his loyalists in Algeria spelled doom for the putsch. Also, as the seizing of the *Palais d'Eté* had been one of the putschists' first moves, it was a mistake that the four leaders were not involved. The 1ˢᵗ REP regiment was led by Captain Sergent, who ironically, "got his orders to 'go' from Major de Saint-Marc" (Watson 448) instead of from one of the four main leaders. This illustrates the lack of effective leadership and a coherent plan.

As the leader of the putsch, General Challe was also overzealous in his ambition to prove his military capabilities. As an idealist whose conscience suffered as a result of having to abandon a close-to-success military plan, "Challe's plan was predicated on mobilizing local reserves for a three-month campaign to crush the ALN (National Liberation Army) and present Paris with a pacified Algeria, *sur le plateau*" (Connelly 238). Journalist Jacques Fauvet commented that, in effect, "Challe was trying to finish what two regimes, four commanders-in-chief, and seven governments were unable to finish in seven years" (Horne, A Savage War 445). Challe was overly ambitious in wanting to prove to the French government that it should not have shut down his offensive. He was desperate to show that he was capable of destroying the ALN. However, given the strength of the de Gaulle regime and the magnitude and complexity of the task the generals tried to undertake, there was a very slim chance that they would succeed. Therefore, careless planning and unrealistic goals further minimized the threat posed by the putsch.

The putsch also lacked speed. On the first night of the revolt, they were only able to seize several important buildings in Algiers while "Oran and Constantine remained untroubled, with their respective generals declaring loyalty to de Gaulle" (Alexander 400). This again, eradicated the putsch's element of surprise.

6. Lack of Support and Resources

The putschists failed to gain the support of the popular General Jacques Massu. He was relieved of command in 1960 because he "openly criticized the government in an interview" (Pontecorvo). However, though embittered and frustrated, he told Alistair Horne in an interview: "I certainly did not march with the putsch because I would have had no intention of creating divisions within the army, and also because I have always been with de Gaulle" (Horne, A Savage War 439). De Gaulle still had very loyal generals and the lack of Massu's support meant the loss of a great asset.

The putschists also failed to gain international support and even though there were many rumours of CIA and US government interference, most of these were rebuked. "There was a flurry of rumours at the time affirming that the CIA was in some way involved in the generals' coup. Paris appeared to take them seriously" (Wall 241). The more ambitious of the putschists wanted to establish an anti-communist military junta upon overthrowing de Gaulle, so that there were many rumours about the US clandestinely aiding the Generals. These allegations caused much fear in France and in Algeria as "Challe was seen accompanied by senior United States officers in uniform" (Horne, A Savage War 446). Sensational "evidence" that supported the rumours of American involvement was profligate. However, historians, including Alistair Horne and Irwin Wall, have asserted that there was no concrete evidence proving American involvement because the United States fully supported de Gaulle's policy of de-colonization. "The rumours were spread by Moscow with the assistance of certain anti-American milieus in France" (Wall 32) and "the notion of CIA involvement in the putsch was largely a canard launched by the Communist press in France and in Italy" (Horne, A Savage War 446), illustrating that the rumours were intended to cause tension in Franco-American relations. Therefore, the lack of international support for the generals greatly diminished the threat that the putsch posed to the French government.

As the manager of logistics, General Zeller gave a very depressing report, "there was only three weeks of medical supplies, milk and olive oil, while the *Banque de France* only had twelve million dollars" (Horne, A Savage War 451). This sheds light on the lack of planning that is essential to a putsch prior to execution. Transportation suffered even more, for even Challe's status as ex-air force commander did not gain him the air force's support: "The army lacked the means to get to mainland France. The navy and the air force did not support the putsch: transport planes flew back to mainland France before they could be commandeered by the paras. The fighter jet pilots were the most Gaullist" (Vinen 170). This shows lack of investigation into the political inclination of air force units. This lack of military support minimized the threat that the putsch posed to de Gaulle.

Finally, de Gaulle's speech of April 1961 dealt a decisive blow to the putsch. He united the people as he proclaimed the humble yet powerful words, "Frenchmen, Frenchwomen, help me!" ("*Discours*"). First he insulted the four putschists by calling them "*un quarteron de généraux en retraite*" (a quartet of retired generals) ("*Discours*"). He then "bemoaned the fact that [his efforts] had been jeopardized by 'an odious and stupid adventure'" (Connelly 239). He also cleverly turned the initial disadvantage of the insurgents being his closest generals into a rallying point, stating that "the nation [has been] challenged, our power rattled, our role in Africa compromised by the very men whose very duty, honour, and reason to be was to serve and to obey" ("*Discours*"). De Gaulle chastised the generals for impeding the country's decolonization process.

He knew that "the rest of the Army remained loyal to the government and that a nation, weary of war, supported [him]"

(Martin 54). This was how he was able to confidently crush the putsch without risking an outbreak of civil war. The referendum of January 1961, four months prior to the putsch, was met with "three-quarters of voters in the *metropole* approving self-determination" (Connelly 234). In Algeria, "69.5% supported independence as opposed to an 18% rejection" (Pervillé 202). One can see that de Gaulle enjoyed immense support from his people, which enabled the peace talks at Evian to proceed. Less than a year after the Generals' putsch, "on 16 March, 1962, the government and the FLN signed peace accords in Evian, and independence was declared 3 July, 1962" (Martin 54).

7. Conclusion

In order to determine the degree to which the Generals' Putsch posed a threat to de Gaulle's policies in Algeria, the aspects of the putschists' status, the event's planning and execution, as well as reactions from different parties were critically evaluated. Most of the evidence that suggests that the putsch threatened de Gaulle's plans was more deeply rooted in the context of the era. The violent reactions against de Gaulle's Algerian national self-determination speech were indeed a potential threat to the government's stability, and the Generals' Putsch was but a failed manifestation of this seething social discontent. Therefore, it is more apt to argue that it was the historical context that made it a particularly trying time for de Gaulle.

As one can see from the latter part of this paper, the poor planning, careless execution, and unbridgeable divisions within the group of leaders signify that this putsch never really stood a chance. How could a group of retired generals succeed in changing a government's course when each individual had a different agenda and when they had miscalculated their odds of winning at every turn? The minimal threat of this putsch is further illustrated by the way de Gaulle regained the people's trust with his speech and proceeded with the cease-fire. Therefore, the Generals' Putsch was, to a very small extent, a threat to de Gaulle's policies in Algeria.

However, one unresolved issue that lends itself to further research is one that concerns the OAS. Although not a direct result of the failure of the putsch, the establishment of the OAS was more threatening in its terrorist-like assaults on de Gaulle and on the peace talks. It would be very interesting to compare findings of this investigation to evidence evaluating the threat that the OAS posed to de Gaulle.

In conclusion, this investigation has been able to shed some light not only on the reasons for the failure of this putsch, but also the complexity of the relationship between politics and the military. The resistance against Algerian independence represented a moment in history where the friction between conservatism and modernization gave way to the latter.

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浸泡在水中的靈動之美 —— 淺析《邊城》中水的審美意象

方嘉琦

內容提要

《邊城》的故事發生在一個名為茶峒的小山城。眾多文學評論家都注意到作品對生命與自然的讚揚，作者沈從文在作品中表現了邊城的秀麗風光，表現了當地人的樸素與善良，描繪出一幅優美宜人的山水畫。

通過仔細閱讀作品，我發現水在人物塑造、情節發展及自然描寫中，由始至終都被作者反覆著墨。水的出現使《邊城》彷如一部浸泡在水中的、遙遠的故事。在我看來，水在作品裡超出了物質世界具象的層面，帶有一種高層次的文學意義的功能，很大程度上擔當了作品靈魂的角色。

水在《邊城》中的文學意象的功能是什麼？通過研究，我認為水在小說中有深厚的意義，它是生命、快樂與情感之源。本文會圍繞研究問題，參考有關的學術評論，並就此三方面分析水在小說中所擔當的角色及其多元意象。此研究能幫助我對水的功能有清楚的了解，它是作者表達自我情感與對人生天地領悟的一把鑰匙。

1. 序言

中國傳統文化裏有五行（即金、木、水、火、土）之說，而其中「水」為五行之首，是萬物之源。自古以來中國人就跟水結下了不解之緣。在中國古代哲學、文學、音樂等多樣領域，以水為喻、以水借代，甚至以水本身為主題的，多不勝數。在哲學方面，影響力最為深遠的提及水的人，莫過於老子。他認為，水「善利萬物而不爭」[1]，「天下莫柔弱於水，而攻堅強者莫之能勝，以其無以易之。」[2]由此可見，隨着一代代的文人士子不吝筆墨地開闢、豐富「水」的含意，「水」內在的文化意思變得深厚並牢固起來。

《邊城》的作者沈從文深受中國傳統水文化的影響，他的孩提至少年時期都在湘西沅水流域的一方鄉土度過。他曾經寫道：「我情感流動而不凝固，一派清波給予我的影響實在不小。……我學會思索，我認識美，理解人生，水對于我有極大關係。」[3]這說明了水對他的生命體驗的影響，表達了他對水的印象——樸素、自然、孕育生命。在沈從文相當數量的作品裏，如《邊城》、《長河》、《湘行書簡》裏，「水」都佔有一席之地，而所代表的意象也大抵相若。《邊城》的主要場景：依山傍水的茶嶺恰可印證沈從文與水的淵源。本文擬以《邊城》這部小說為分析素材，擬從生命之源、快樂之源與情感之源三方面切入，發表拙見，以此發表我對這位在水邊生長的作家的水之情懷的認識。

2. 生命之源

沈從文的《邊城》可認為是一首民俗頌歌。水伴隨著人生的開始，宣示人生的結束。中國古代思想中，《春秋齊國‧管仲》中就有「水萬物之本源也」[4]之說。在《邊城》中，水不但是茶峒人賴以生存的天然資源，也在人們生活環境中佔有重要的席位。故事發生在湘西邊境一個名為「茶峒」[5]的小山城，那裡山清水秀，別有洞天。學者朱蔚青指出：「在沈從文心中，水是一種生命的象徵，他天然清澈，潔淨靈動，剛柔相濟，具有永不枯竭的生命力」[6]，我認為此言十分有理，因為人的生命確實離不開水。

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[1] 《道德經第八章》，中國古籍全錄。2013 年 7 月 24 日

[2] 《道德經第七十八章》，中國古籍全錄。2013 年 7 月 24 日

[3] 沈從文，〈我讀一本小書同時又讀一本大書〉，《沈從文全集‧卷十三》，太遠：北岳文藝出版社，2002 年版

[4] 《詩中水》，水專題學習網站。2013 年 10 月 24 日

[5] 沈從文，《沈從文作品選》，香港：三聯書店，2006 年版，第 3 頁

[6] 朱蔚青，〈邊城中水的象徵性意義〉，《文學教育》，2013 年第 01 期

水在作品開頭對茶峒的描述時便出現了。茶峒憑水依山[7]，與河水是緊緊相連。作為川東商業交易接頭處[8]，茶峒與外界的連接，從貨物的進出口，到貿易的發展，都需要依賴這條白河。「小船到此後，即無從上行，故凡川東的進出口貨物，皆由這地落水起岸」[9]。除此之外，茶峒白河詩情畫意的怡人風光也能吸引旅客，小說中描述遊客們在小河中作三十天的旅行，也不會感到厭煩，因為白河的自然風景使他們神往傾心[10]。不少人靠水維持生計，包括縴夫、水手、船主、商人等等。有船來時，遠遠的從河灘上就可以看到無數縴夫，他們靠著送點心洋糖之類的貨物換取費用[11]。另外，有的人以介紹水手為事業，「吃水碼頭飯」[12]，他們會談船上生意經，買賣船隻。掌水碼頭的龍頭大哥順順負責解決水上各事，他有一條「六槳白木船，租給一個窮船主，代人裝貨在茶峒與辰州之間來往」[13]，以此謀利營生。由此可見，茶峒人的生計與水息息相關。

小說中的主要人物老船夫與他的孫女翠翠也依水而生，依水而活。老船夫一生未曾離開過水，水成為了他生活的一部份。他「活了七十年，從二十歲起便守在這小溪邊，五十年來不知把船來去渡了若干人」[14]。他的渡船營生也與水緊密相連，這仿佛是老天爺的旨意，因為即使他已經年邁，「本來應當休息了，但天不許他休息，他仿佛便不能夠同這一分生活離開」[15]，這暗示著人與自然的和諧與結合，是天意，無可違抗。假若老人疲乏了，一時不能替路人渡溪，他的孫女就會自覺地頂替了他，「很敏捷的替祖父把路人渡過溪，一切皆溜刷在行，從不誤事」[16]，動作熟練，表現天衣無縫。若是撐渡船的位置空缺了，船家們欲渡溪時，便無能為力。這說明這個職位不可以空掉，因為沒有渡船，人們的生活就會受到影響。

所謂「水則載舟，水則覆舟」[17]，作為人類賴以生存的水，在人們的生存層面上俱有重大意義，但同時也帶有著毀滅性。小說中的一個細節是，「某一年水若來得特別猛一些，沿河吊腳樓必有一處兩處為大水沖去」[18]，可見自然之強悍，人或不能操控或違抗。在《邊城》中，水是茶峒不可缺少的天然資源，它無處不在，伴隨生死。學者王輕鴻認為「《邊城》中的水是一種隱性的結構，它暗喻了人物的命運、故事情節的演進，一明一暗奇特地組合在一起」[19]，人物的命運確實與水息息相關，水在作品中象徵了生命之源，《邊城》的故事情節也與水緊緊相扣，它在文章中多次出現，突顯了其象徵意義之重要性。

3. 快樂之源

作者對水的描寫彰顯了水和快樂的聯繫，建構了水和快樂之間象徵的橋樑，突出了水象徵快樂的作用。茶峒是一片人情味重、沒有紛爭、沒有執拗的和平之地，好比陶淵明在《桃花源記》中描繪的一片富饒豐足的樂土，一個安樂避世之地。茶峒又何嘗不是沈從文筆下的桃花源——一個理想的烏托邦？孔子曰：「智者樂水，仁者樂山；智者動，仁者靜；智者樂，仁者壽」[20]，智者性情好動、思想活躍，如永不停息、川流不息的江水，喜愛水的智者是快樂的。生活中不能與水分離的茶峒人也樂在水中。對比人情薄如紙的商業化社會，觀照沈從文的這個小邊城，回溯陶淵明的桃花源，不難發現人性的真善美。茶峒人的快樂是淳樸的，是優美且自然的。

每到喜慶節日，茶峒人會以水為樂，樂在水中。最熱鬧的日子莫過於端午、中秋和過年，而且人們從來不會感到厭煩，「三個節日過去三五十年前如何興奮了這地方人，直到現在，還毫無什麼變化，仍能成為那地方居民最有意義的幾個日子」[21]。即使是過節，茶峒人的慶祝活動也與水相關，小說中提到茶峒人都全家出動，到河邊觀看划船[22]。看划船的人

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[7] 「茶峒地方憑水依山築城」。沈從文，《沈從文作品選》，香港：三聯書店，2006年版，第7頁

[8] 「這小城（茶峒）裡雖那麼安靜和平，但地方既為川東商業交易接頭處，因此城外蕭蕭河街，情形卻不同了一點。」同上，第10頁

[9] 同上，第8頁

[10] 「對詩歌圖畫稍有興味的旅客，在這小河中，蜷伏於一隻小船上，作三十天的旅行，必不至於感到厭煩，正因為處處有奇跡，自然的大膽處與精巧處，無一處不使人神往傾心。」同上，第8頁

[11] 「那些縴夫也有從下游地方，帶了細點心洋糖之類，攏岸時卻拿進稱重來換錢的。」同上，第9頁

[12] 沈從文，《沈從文作品選》，香港：三聯書店，2006年版，第10頁

[13] 同上，第12頁

[14] 同上，第4頁

[15] 同上，第4頁

[16] 同上，第5頁

[17] 《荀子·王制篇第九》，東華理工大學圖書館：國學經典書庫。2013年10月24日

[18] 沈從文，《沈從文作品選》，香港：三聯書店，2006年版，第7頁

[19] 王輕鴻，〈建築在水上的邊城——沈從文邊城內在意蘊新解〉，《名作欣賞》，1996年第5期

[20] 《〈論語·雍也第六〉菁華選粹》，大方廣文化公益館。2013年10月24日，

[21] 沈從文，《沈從文作品選》，香港：三聯書店，2006年版，第15頁

[22] 「大約上午十一點左右，全茶峒人就吃了午飯，把飯吃過後，在城裡住家的，莫不倒鎖了門，全家出城到河邊看划船」。同上，第15頁

快樂無憂，划船的更是幹勁十足，樂在其中。男女老幼都投入到比賽競爭中。這一項水上活動，似乎已能稱得上是整個節日的必備節目，連當官的也與民同樂。作者把划船的盛況描述得仔細入微，暗示著活動對茶峒人的意義，無論是船的形體、顏色、擱置位置、槳手的特質、槳節拍與鑼鼓聲的配合、觀眾的反應……細膩的描寫與修辭的運用使讀者有親臨其境的感覺，其中一個例子是「船一划動便即刻<u>蓬蓬鏜鏜</u>把鑼鼓很單純的敲打起來」[23]中擬聲的運用，強化熱鬧、快樂的效果。每到競賽高潮處，「掌聲如雷鳴，加上兩岸人吶喊助威，便使人想起梁紅玉老鸛河時水戰擂鼓，牛皋水擒楊么時也是水戰擂鼓。」[24]岸上觀眾的激烈反應突出了他們對划船的關注與投入。另外，捉鴨子的細節描述更是惟妙惟肖，表現出茶峒人的在慶典中的熱血沸騰。端午節的兩大節目便是划船競賽與捉鴨子，船、人、鴨子的熱鬧，整整持續一個晚上。這兩項水上活動，成為每年茶峒人的 快樂來源。

除此之外，靠水為生的翠翠也從船渡中得到快樂。每次有小牛、羊群、新娘子的花轎過渡，翠翠必與爺爺爭著做船伕[25]，看熱鬧，好不快活。之後，還會慢慢回味，學著小羊、母牛叫，還扮新娘子[26]，樂趣無窮。即使是老渡船夫，在水上也能快樂地自娛，當翠翠叫爺爺聽她吹竹管，跟著唱歌時，他「便會很快樂的唱起來，啞啞的聲音同竹管聲震盪在寂靜空氣裏，溪中仿佛也熱鬧了一些。（實則歌聲的來複，反而使一切更寂靜一些了。）」[27]括號中的說明實際上歌聲沒有令溪中變得熱鬧，反而使環境變得更寂靜，但作者的描述卻令讀者覺得爺孫倆在溪中一唱一吹，即便周遭的環境並非「熱鬧」，但他們也照樣可以自得其樂。暗示出在大自然中，可使人忘卻世俗的紛擾，喚醒人們善良純樸的美好人性。再者，翠翠在大自然與水的養育下長大，「在風日裏養著」[28]，而且「自然即長養她且教育她」[29]，因此翠翠性情的純良[30]，可以歸功於大自然對她自幼的孕育。作者曾經說過：「我要表現的本是一種優美、健康、自然，而不是悖於人性的人生

形式」[31]，快樂源於自然與健康，不單表現在形式，也蘊含在人性中。現代社會的城市讀者可能會認為茶峒人緩慢的生活節奏枯燥乏味，但正是大自然的景物喚起的心中的感動，使茶峒人在淳樸簡單的生活中其樂融融。

在我看來，沈從文之所以把翠翠和茶峒人們描寫為自然健康，正因為他們的人性是淳樸與善良的。無疑，水在他的描寫中也帶有一種文學象徵意義，成為了淳樸善良的載體。學者劉洪濤認為「沈從文的樂園構想，建立在人性善的基礎上」[32]，我同意他的說法。 水代表了快樂之源，它貫穿在茶峒人自然原始的生命方式中，作者通過水表現了他對淳樸與自然的讚揚，也使他的思想在作品中表達得更透徹。

4. 情感之源

水不但充滿了生機蓬勃之美，也似乎帶有人的感情，是茶峒人的真摯情感的源泉。學著潘靜認為《邊城》中的翠翠、天寶、儺送「演繹著年輕生命在情感經歷上的悲歡與憂傷」[33]。在小說中，水是這些年輕生命的情感之源，是淳樸、美好人性的象徵。

翠翠與儺送的第一次相遇便是在石碼頭邊。翠翠本隨著祖父過大河邊進城觀看划船競賽，但是祖父因為友人喝醉了，使得獨自一人留在河邊等待爺爺的翠翠非常著急[34]，孤形單影的翠翠在碼頭上遇到了儺送。作者用了未知其名，先見其人的手法帶出了儺送這個角色。翠翠與讀者都是在他們二人離別後才得知那位男子是儺送[35]。他們雖然只交談數句，但是這一次邂逅對他們而言意味深長。一年後，當有人提起他們兩人那一天的對話時，翠翠「一句話不說，只是抿著嘴唇笑著」[36]，可見她對當天的情形印象深刻，且對儺送已情有獨鍾。後來翠翠還是在爺爺面前故意否認記得當天的事，「故意說：『我記不得，我記不得。』其實她那意思就是『我怎麼

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[23] 沈從文，《沈從文作品選》，香港：三聯書店，2006 年版，第 16 頁

[24] 同上，第 16 頁

[25] 「有時過渡的是從川東來茶峒的小牛，是羊群，是新娘子的花轎，翠翠必爭著作渡船夫，站在船頭」。同上，第 6 頁

[26] 「（翠翠）且獨自低低的學小羊叫著，學母牛叫著，或採一把野花縛在頭上，獨自裝扮新娘子。」同上，第 6 頁

[27] 同上，第 6 頁

[28] 沈從文，《沈從文作品選》，香港：三聯書店，2006 年版，第 5 頁

[29] 同上，第 5 頁

[30] 「為人天真活潑，處處儼然如一隻小獸物。人又那麼乖，如山頭黃麂一樣，從不想到殘忍事情，不發愁，從不動氣。」同上，第 5 頁

[31] 沈從文，《沈從文文集》，廣州：花城出版社，1982 年版，第 45 頁

[32] 劉洪濤，《沈從文小說與現代主義》，臺北市：秀威資訊科技，2009 年版，第 131 頁

[33] 潘靜，〈從原型批評的視角研究沈從文的"水"意象〉，《現代文學》，2012 年第 04 期

[34] 「祖父爲了責任又不便於渡船離開，留在河邊的翠翠便不能不著急了。」沈從文，《沈從文作品選》，
香港：三聯書店，2006 年版，第 19 頁

[35] 「『二老你都不知道？就是我們河街上的儺送二老！』」同上，第 23 頁

[36] 同上，第 25 頁

記不得？！』」[37]，可見翠翠是因為害羞、含蓄，恰恰證明那天在水邊的相逢喚醒翠翠心靈中對愛情的渴望。由此可推斷，水促進了兩位年輕人的相遇，觸動了兩人心中柔情的一面。

翠翠與儺送二人的相遇源於水，他們的情感上的發展也同樣建基於水。學者范家進寫道：「就在這樣一個以精美絕倫的語言所構建的美不勝收的山水園林背景中，一段發生在邊城小兒女之間的朦朦朧朧、忽濃忽淡、喜中有悲、悲中有喜但總體不失優美的愛情故事緩緩展開」[38]。儺送追求翠翠走的「馬路」[39]便是站在溪高崖竹林裡為她唱歌。自大老淹死在水裡後，翠翠與儺送的情感便註定無法開花結果，思念兒子的船總雖然豪爽，可他絕不願意間接導致大兒子死亡的翠翠再成為小兒子的媳婦[40]。水促成了年輕人彼此的情感，同時也毀滅了他們之間存在的美好聯繫。但這些阻礙沒有撲滅翠翠心中的愛，她寧願默默守候、等待，正如學者劉春哲寫道：「在翠翠身上存在著一種出於自然而又歸於自然的人性美」[41]，只有常年生活在水邊，被水的柔情孕育的少女才有如此古樸、純潔、善良的情懷。 由此看來，在沈從文的作品裡，水有人性，水有情感，水中有人生的悲歡離合。人生如水、生命如水這真諦在這裡得到了體現。

5. 總結

從古至今，水對萬物生命的重要性未曾改變。無論男女老少，茶峒人人靠水維生，以水為樂，寄情於水。水作為生活的一部份，是清澈透明，富有力量。學者汪曾祺認為「沈從文不是一個雕塑家，他是一個畫家。一個風景畫的大師。他畫的不是油畫，是中國的彩墨畫，筆致疏朗，著色明麗」[42]。閱讀《邊城》，確實有如觀賞一幅彩墨畫，雖筆墨簡樸，卻不乏美感，生動的形態亦傳神於筆墨之外，水是其中關鍵的元素。《邊城》

的文字淺白，但是簡單的文字更能突出茶峒人的單純與純潔，憨厚與率真。

水乃人們的生命、快樂與情感之源，我們可以通過書中的水看茶峒人的生存狀態與當地的風土人情。沈從文曾經說道：「海放大了我的感情與希望，且放大了我的人格」[43]，作者與水之間深厚的聯繫表現在作品中， 突顯出它的重要性與背後所蘊藏的意義。 然而，水也具毀滅性。它可以促成翠翠、儺送見面的機會，也可以奪去了大老的生命，使得兩家人關係破裂，造成千古遺恨。水是生命、快樂與情感的源泉，其中還有更多象徵意義，值得我們進一步的探討。

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[38] 范家進，《中國現當代小說點擊》，北京：文化藝術出版社，2005 年版，第 79 頁
[39] 沈從文，《沈從文作品選》，香港：三聯書店，2006 年版，第 56 頁
[40] 「船總性情雖異常豪爽，可不願意間接把第一個兒子弄死的女孩子，又來作第二個兒子的媳婦，這是很明白的事情。」同上，第 89 頁
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[42] 沈從文，《沈從文作品選》，香港：三聯書店，2006 年版，第 112 頁

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[43] 沈從文、蕭乾，《廢郵存底》，香港：新文學出版社，1975 年版，第 34 頁

An Investigation of Zinc Sulfate Clusters

Kaiwen Chen

ABSTRACT

Zinc sulfate ($ZnSO_4$) is a common salt present in oxidized surface waters and may serve as a suitable model material to better understand precipitation/nucleation processes in aqueous fluids. It is used in metallurgical engineering, fertilizers, and commonly seen in acidified water. It is also present in Hong Kong's air pollution. Many studies have observed that zinc sulfate has high water affinity, characterized by its ability to form multi-hydrated complex ions. Prior spectroscopic studies have been published about the bonding in zinc sulfate, but its structure and nucleation have received less attention. This experimental study uses FTICR mass spectroscopy to investigate the nucleation, oxidation, and hydration tendencies of prenucleation zinc sulfate clusters at low concentration, which may provide a structural and molecular explanation for the water affinity of zinc sulfate. Currently, little is known about the composition, structure and stability of $ZnSO_4$ at the cluster level. In the current study, electrospray ionization (ESI) Fourier Transfer Ion Cyclotron Resonance Mass Spectrometry (FTICR-MS) was used to offer insights into the structural characteristics of the aforementioned zinc sulfate. The mass spectra reading software, *mMass*, was used to characterize ion cluster species. Stoichiometries of zinc sulfate ion clusters identified using FTICR-MS are presented. In 15mM dilute aqueous solution of zinc sulfate, singly-charged ion clusters $[Zn_m(SO_4)_{m-1}(OH)\cdot(H_2O)_n]^+$ with m=2, 3, 4 and 5 have been identified. In addition, a set of doubly-charged clusters with the general form $[Zn_m(SO_4)_{m-1}\cdot(H_2O)_n]^{2+}$ with 4≤m≤10 have been characterized. This suggests a scheme, in which singly-charged cluster species with m=4,5 are regarded to be of a critical-size from which stable doubly-charged ions begin to emerge. Upon passing the m~4-5 size-range, zinc sulfate clusters exhibit a strong affinity towards water with stable hepta-hydrates, marking the upper range of microsolvation. These findings suggest that there is a nucleation mechanism for zinc sulfate to gain water affinity.

1. Introduction

Zinc sulfate ($ZnSO_4$) is a white ionic compound[1], often added to plants to increase zinc content (Wilson 1977). It exists in nature in various hydration states e.g. $ZnSO_4 \cdot 7H_2O$ (Sigma 2003). Studies have shown that zinc sulfate can be used as a fertilizer, commonly used in agriculture as a source of zinc and sulfur (RSC). Zinc sulfate is also used to fortify wheat flour to avoid zinc deficiency (Olivares *et al.* 471). The European Food Safety Authority explicitly desig-nates zinc sulfate monohydrate as a safe and efficacious source of zinc when used as additives to livestock feeds (1). Zinc sulfate can also be a source from which high purity zinc metal is extracted (Raghavan *et al.* 187). Industrial zinc sulfate can also be a platform for nickel cementation[2] in metallurgy (Dib & Makhloufi 146). Zinc and Sulfate have been reported in the air pollution of Hong Kong (Wong *et al.* 464). Biologically, Zn^{2+} ions have also been found to be "key structural components in a large number of metalloproteins" (Lagutschenkov *et al.* 316).[3] It has also been noted that zinc sulfate is an effective coagulant in differential sulfide flotation and can increase flotation efficiency (Cao & Liu 523). Zinc sulfate is also a common salt present in oxidized surface waters and can serve as a model compound to better understand precipitation/nucleation processes (Lemke). In brief, precipitation of $ZnSO_4$ commences with single molecule association (complexation) reactions and proceeds via a wide range of prenucleation clusters $(ZnSO_4)_n$ and nanocrystalites, ultimately toward bulk $ZnSO_4$. Evidently, $ZnSO_4$ growth will pass through the cluster-size domain, from which small $ZnSO_4$ cluster subunits emerge with charac- teristic chain, sheet and 3-D structures. Observing that zinc sulfate has tremendous industrial, biological, agricultural, and geophysical applications, studying the environment in which it grows offers useful insights into further ways of controlling or manipulating zinc sulfate.

Despite its many uses, zinc sulfate has not been a primary subject of *ab initio* and spectrometric studies. The current literature records several studies of zinc sulfate using Raman spectroscopy and X-ray diffraction, both methods focusing on the bonding of $Zn(SO_4)$ without reference to nucleation, but treating zinc sulfate as a solution (Rudolph *et al.* 623; Black *et al.* 774; Rudolph & Pye 1047). Although the literature contains data such as bond length, solubility and thermodynamic properties, most studies focus on post-nucleation zinc sulfate, i.e. zinc sulfate that has already grown into its crystal structures. What they overlook is

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[1] In solid state
[2] Cementation refers to the cementing of nickel metal onto zinc metal in order to separate nickel ions from industrial acidic zinc sulfate solution.
[3] An example is the Carbonic Anhydrase, an enzyme assisting interconversion between CO_2, H_2O, and carbonic acid to maintain balance of acidity (Dutta & Goodsell).

the process of zinc sulfate nucleation, which may explain the properties described by many studies, including the high water affinity and crystal growth pattern of zinc sulfate (Black *et al.* 773; Saha & Podder 203). The purpose of this study is to: (1) investigate the nucleation tendency of zinc sulfate clusters; (2) investigate the oxidation tendency of zinc sulfate clusters; and (3) investigate the hydration tendency of zinc sulfate clusters. All three aspects address prenucleation zinc sulfate at low concentration. This study can provide empirical evidence for explaining zinc sulfate's water affinity and other properties. In addition, this study lays the foundation for *ab initio* calculations of thermodynamic properties of zinc sulfate formation, which offers further information about the environments in which zinc sulfate can be found.

## 2. Production of ZnSO$_{4(s)}$

Production of zinc sulfate is relatively straightforward, given the ionic nature of the compound. Industrial methods of producing zinc sulfate include:

$$ZnCO_{3(s)} + H_2SO_{4(aq)} \rightarrow ZnSO_{4(aq)} + H_2O_{(l)} + CO_{2(g)}$$
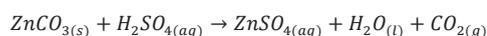
This method can be used to extract zinc sulfate from zinc ore, which commonly includes zinc carbonate.

$$ZnO_{(s)} + H_2SO_{4(aq)} \rightarrow ZnSO_{4(aq)} + H_2O_{(l)}$$
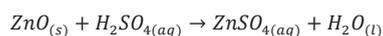
This method is often used for pharmaceutical purposes, given that zinc oxide is highly pure. As such, high purity zinc sulfate can be produced.

$$Zn_{(s)} + H_2SO_{4(aq)} + 7H_2O_{(l)} \rightarrow ZnSO_4 \cdot (H_2O)_{7(aq)} + H_{2(g)}$$
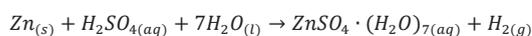
Treating zinc metal with sulfuric acid can be a straightforward method of producing complex hydrated zinc sulfate. However, to achieve greater accuracy and minimize error, dissolving stock zinc sulfate salt is more effective, because producing intermediate substances may incur unnecessary error and contamination. Therefore, the chemical used in this study was made from stock ZnSO$_4$·7H$_2$O$_{(s)}$.

3. Electrospray ionization

Prior to entering the mass spectrometer, an ion source must first be vaporized and ionized to enter a gaseous ionic phase. The generic equation for the ionization of a metal (X) is:

$$X_{(g)} \rightarrow X^+_{(g)} + e^-$$
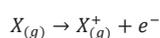
Electrospray ionization, or ESI, is a method used to ionize neutrally charged metal atoms. In the ESI, bulk solution is pumped into the ESI capillary using a syringe. It is then oxidized to become positively charged ions and eventually reaches the end of the ESI capillary. As charged droplets are formed when they leave the ESI capillary, they are gradually refined and shrink to smaller-sized

droplets. Finally, the very fine droplets enter a gaseous state and enter the FTICR-MS. The advantages of ESI include its ability to preserve the multiple charge on ionized species, and the ability to ionize large molecules (Fenn *et al.* 64). This has been utilized by prior research on alkali metal ions (Hao *et al.* 82), and is very useful in the present study, for zinc readily produces 2$^+$ charged ions, and its double charge needs to be observed and noted. The ability of ESI to preserve charge was demonstrated by various experiments, such as those done by Dion *et al.*, who observed multiply-charged inorganic ions, including Zn^{2+} ions in zinc sulfate molecules in aqueous solution (1170). This is the ionization technique used in the current study.

4. FT-ICR Mass Spectrometry

FTICR-MS is a spectrometric technique which offers insights into the elemental composition from accurate mass measurement (Marshall *et al.* 24). Ion cyclotron has distinctive characteristics (i.e. frequency, radius, velocity, and energy), which are the results of distinguishing ion mass, charge, and magnetic field strength (*Ibid* 2). In FTICR-MS, gaseous ions are excited by an electro-magnetic field, enter ion cyclotron motion, and are detected when ions of different atoms rotate at different rates.
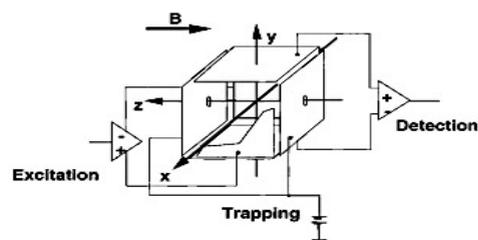

Fig. 1 – A diagram of the electric circuitry of a rotating electric field, an important component in ion excitation and detecting.

Ion mass is extrapolated from ion cyclotron behavior and a mass/charge (*m/z*) spectrum is produced. FTICR-MS is different from traditional mass spectrometry where ionized particles fly through the equipment and only those of a particular mass are captured. Instead, FTICR-MS captures the ionized particles, motivates each of them to move in its idiosyncratic fashion, and deduces their mass from their behaviors. It is commonly acknowledged that FTICR-MS produces spectra of much higher resolution, because the *m/z* measure is produced as a frequency, which is more accurate than other physical parameters (Marshall *et al.* 25; Amster 1333; Meng *et al.* 126). In addition, FTICR-MS investigation of molecular structures has been successfully used to study the structures of ion clusters (Lemke & Seward 1). Another strength of FTICR-MS is its ability to detect multiply-charged ions. Given this and the high resolution of FTICR-MS, FTICR-MS is an effective analytical apparatus for investigating ion clusters in a sample solution of Zinc Sulfate, thereby gaining insight into its properties and behavior.

Several prior studies of zinc sulfate used Raman Spectroscopy (RS)[4]. However, RS and spectroscopy, in general, are limited in that they do not provide insights into individual prenucleation ion clusters. Therefore, these techniques are unable to provide the type of evidence this study requires, namely, the nucleation tendencies of zinc sulfate ion cluster species of different sizes. Hence, FTICR-MS, instead of spectroscopic apparatus, was chosen.

5. mMass

As ions are detected according to their unique ion cyclotron resonance frequencies, a mass spectrum is produced. The x axis of the mass spectrum is the m/z ratio of a cluster, and the y axis is the abundance intensity of a particular m/z ratio. mMass is an open access computer software developed to read mass spectra in this manner. Strohalm *et al.* argue that mMass is a software for mass spectrometric analysis of spectra saved in multiple formats, allowing a precise analysis (905). In the current study, mMass is used to compare theoretical m/z ratios to those experimental.

6. Preparing ZnSO$_4$ solutions

Zinc sulfate solution was prepared from zinc sulfate hepta-hydrate ($ZnSO_4 \cdot 7H_2O_{(s)}$). 15mM $ZnSO_{4(aq)}$ was prepared in advance to the FTICR-MS analysis. Stock chemical $ZnSO_4 \cdot 7H_2O_{(s)}$ was acquired from 99.0% minimum purity crystals, with maximum impurities explained below:

Reaction	Passive
Insoluble	0.01
Chloride	0.001
Manganese (Mn)	0.0005
Iron (Fe)	0.001
Arsenic (As)	0.0003
Heavy metals (as Pb)	0.005
Alkalies [sic] magnesium (SO$_4$)	0.1

Table 1 – Maximum Impurities (% by mass) (UNI-Chem)

1.0784g of $ZnSO_4 \cdot 7H_2O_{(s)}$ was weighed using analytical balance (±0.0002g). All solids were removed from the beaker to a 250mL volumetric flask (±0.15mL). Deionized water was inserted until the bottom of the meniscus was on the 250mL mark. Thus, 15mM zinc sulfate heptahydrate solution was produced. $\%_{Error}$ in concentration is 0.06931%.

7. Mass Spectroscopic investigation of samples

The FTICR mass spectrometer manufactured by Bruker Company was used. After a sample solution was prepared, a syringe was cleaned five times with deionized water to remove existing particles and minimize contamination. The prepared solution was then inserted into the syringe, which was connected to the ESI by

an automated dispenser. FTICR-MS was performed on the 15mM $ZnSO_4$ solution and the following mass spectrum was collected, with abundance intensity (a.i.) indicated on the y-axis and m/z on the x-axis:
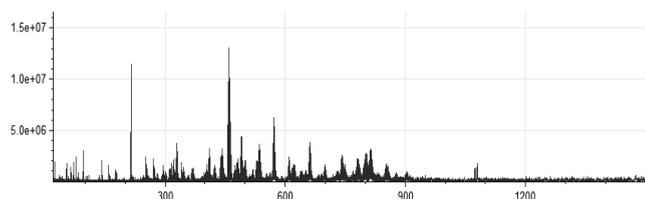

Fig. 2 – Complete mass spectrum of 15mM Zinc Sulfate

8. Identification of species

The mass spectrum collected from the FTICR-MS was analyzed and species of ion clusters present in the mass spectrum were identified using mMass. Specifically, identification was achieved by typing the molecular formula, including hydrates, of a predicted ion species in the "MassCalc" function of mMass, and comparing the theoretical m/z ratio with that of the experimental. Where the abundance of both is similar, and the shape of the distribution, height of the distribution, and charge of the distribution are all consistent, the predicted species was said to match the detected species. No species is ±0.5 away in m/z between theoretical and experimental values.

9. Results

Below are all species of clusters that were identified in the mass spectrum. All species are gaseous, as they were vaporized during ESI. Species are first organized according to the number of zinc atoms present, then according to the charge (where appropriate). The number of water molecules identified with each cluster is also noted.

Species	Hydration state (number of H$_2$O$_{(n)}$ as ligands)
Zn^{1+}	0
$[ZnHSO_4]^{1+}$	5, 6
$[ZnOH]^{1+}$	0
$[Zn_2(SO_4)OH]^{1+}$	2, 3
$[Zn_3(SO_4)_2OH]^{1+}$	0, 1, 2, 3, 4
$[Zn_4(SO_4)_3OH]^{1+}$	3, 4
$[Zn_4(SO_4)_3]^{2+}$	2, 3, 4, 5, 6
$[Zn_5(SO_4)_4OH]^{1+}$	3, 4
$[Zn_5(SO_4)_4]^{2+}$	3, 4, 5, 6
$[Zn_6(SO_4)_5]^{2+}$	4, 5, 6, 7
$[Zn_7(SO_4)_6]^{2+}$	3, 4, 5, 6
$[Zn_8(SO_4)_7]^{2+}$	5, 6, 7
$[Zn_9(SO_4)_8]^{2+}$	5, 6, 7
$[Zn_{10}(SO_4)_9]^{2+}$	6
$[Zn_{11}(SO_4)_{10}]^{2+}$	6, 7

Table 2 – Hydration state(s) of identified species of zinc sulfate and its hydroxides

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[4] Such as Rudolph *et al.* (623), Black *et al.* (774) and Rudolph & Pye (1047).

|	Species	Hydration state (number of H_2O as ligands)							
		0	1	2	3	4	5	6	7
a.i.	Zn^{1+}	**1.5E06**							
m/z		**64.0**							
a.i.	$[ZnHSO_4]^{1+}$						**2.4E06**	2.2E06	
m/z							**251.0**	269.0	
a.i.	$[ZnOH]^{1+}$	**4.5E05**							
m/z		**80.9**							
a.i.	$[Zn_2(SO_4)OH]^{1+}$			7.5E05	**1.0E06**				
m/z				278.8	**296.8**				
a.i.	$[Zn_3(SO_4)_2OH]^{1+}$	1.7E06	1.7E06	3.3E06	**1.3E07**	1.8E06			
m/z		404.7	422.7	440.7	**458.7**	476.8			
a.i.	$[Zn_4(SO_4)_3OH]^{1+}$				**1.7E06**	9.8E05			
m/z					**618.9**	636.7			
a.i.	$[Zn_4(SO_4)_3]^{2+}$			3.3E05	7.9E05	1.2E06	1.7E06	**3.7E06**	
m/z				292.8	301.8	310.8	319.8	**328.8**	
a.i.	$[Zn_5(SO_4)_4OH]^{1+}$				2.3E06	**2.8E06**			
m/z					780.5	**798.6**			
a.i.	$[Zn_5(SO_4)_4]^{2+}$			3.5E05	5.5E05	7.3E05	**3.2E06**		
m/z				381.7	390.8	399.8	**409.8**		
a.i.	$[Zn_6(SO_4)_5]^{2+}$				9.9E05	2.2E06	**4.4E06**	2.1E06	
m/z					471.7	480.7	**489.7**	498.7	
a.i.	$[Zn_7(SO_4)_6]^{2+}$				4.5E05	8.0E05	9.2E05	**6.3E06**	
m/z					543.6	552.6	561.7	**570.7**	
a.i.	$[Zn_8(SO_4)_7]^{2+}$					8.9E05	1.1E06	**3.9E06**	
m/z						642.6	651.6	**660.6**	
a.i.	$[Zn_9(SO_4)_8]^{2+}$					5.5E05	8.6E05	**2.6E06**	
m/z						722.6	731.6	**740.5**	
a.i.	$[Zn_{10}(SO_4)_9]^{2+}$						**3.2E06**		
m/z							**814.4**		
a.i.	$[Zn_{11}(SO_4)_{10}]^{2+}$						4.9E05	**9.4E05**	
m/z							892.4	**901.5**	

Table 3 (above) details the isotopic abundance and m/z ratio of the identified species. The values in bold letters are the species of a hydration state with the highest abundance intensity (a.i., hence the most abundant species). Both m/z and a.i. values are recorded in mMass during identification. The a.i. is taken at 1 decimal place for processing. As discussed earlier, in order for species to be identified, they must be less than ±0.5 units away from the theoretical value in m/z, hence no error is reported. Approximations were made when recording a.i. and m/z measures, as a result of limitations of mMass.

10. Analysis[5]

Based on Table 2, clusters are rearranged according to the oxidation number of the individual species. Figure 3 (below) reports oxida-tion numbers of each cluster as nucleation occurs:
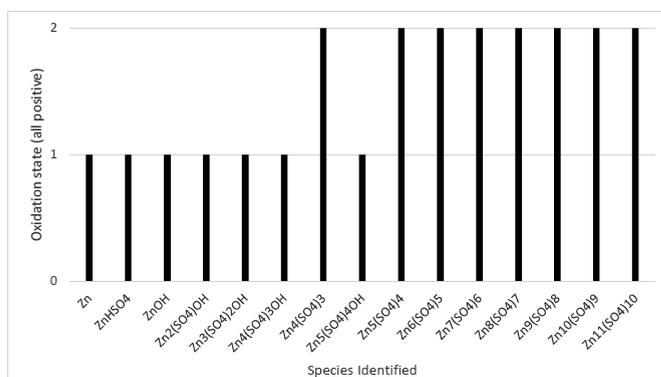
The ion cluster species identified are organized first in terms of different hydration states. As discussed earlier, the hydration state is characterized by the number of H_2O molecules attached to the ion cluster as ligands. Hydration states are predicted during the identification process, and are recorded, if confirmed. Figure 4 (below) presents all identified hydration states present. Each individual bar represents a hydration state in which the ion cluster was found. To avoid confusion, a black bar represents 0 water.
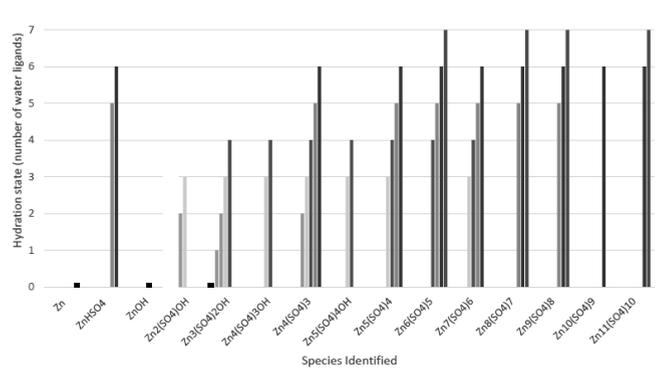
To provide further insight into the hydration behavior of $ZnSO_4$ and $ZnSO_4OH$ clusters (therefore excluding ZnOH and $ZnHSO_4$, hydroxidated and bisulfated, respectively), Figure 5 (see next page) records all $[Zn_m(SO_4)_{m-1}OH]^{1+}$ and $[Zn_m(SO_4)_{m-1}]^{2+}$ species that are most abundant at a hydration state. Note that species are first organized according to charge (1+ or 2+), then according to number of zinc:

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[5] Note that due to software limitation, charges are omitted and subscripts could not be presented in all graphs presented in this section. Therefore, refer to tables 2 and 3 for full presentation of each molecular formula.
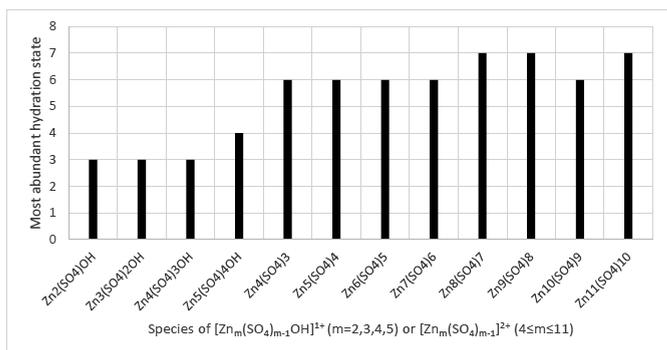
Fig. 5 – Most abundant hydrated species of $[Zn_m(SO_4)_{m-1}OH]^{1+}$ (m=2,3,4,5) and $[Zn_m(SO_4)_{m-1}]^{2+}$ (4≤m≤11)

However, Figure 5 is limited in that the most abundant hydration state is only stated, without regard to the abundance itself. Hence, Figure 6 combines both abundance and hydration state, to provide for a more holistic reading:
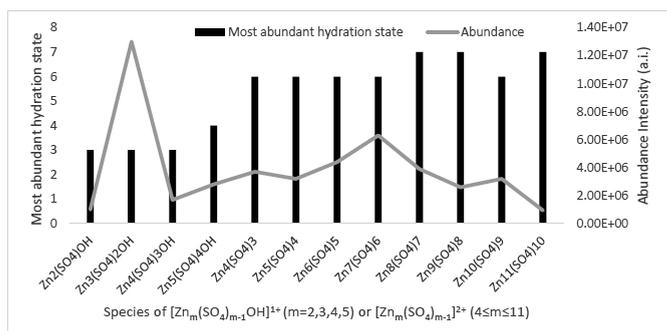

Fig. 6 – Combined graph of most abundant hydrated species of $[Zn_m(SO_4)_{m-1}OH]^{1+}$ (m=2,3,4,5) and $[Zn_m(SO_4)_{m-1}]^{2+}$ (4 ≤ m ≤ 11), with reference to abundance

To measure the abundance of zinc sulfate / zinc hydroxyl sulfate with any given number of zinc, abundance of each hydrated species are added to produce Figure 7:
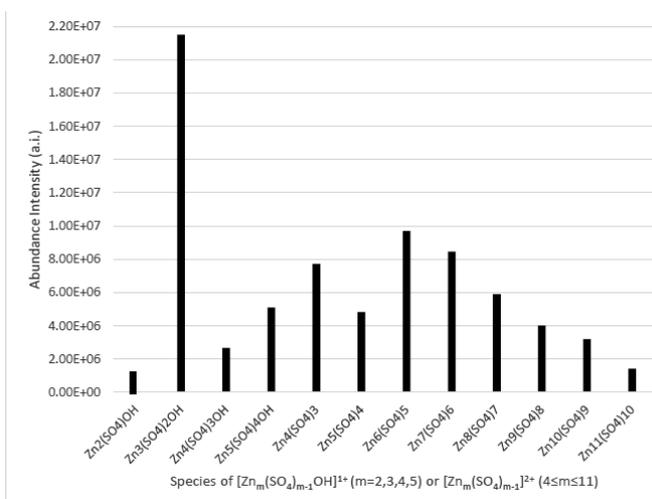

Fig. 7 – Total abundance intensity of species of $[Zn_m(SO_4)_{m-1}OH]^{1+}$ (m=2,3,4,5) and $[Zn_m(SO_4)_{m-1}]^{2+}$ (4≤m≤11)

Whilst Figure 7 offers insights into the abundance of each cluster, there is no way to directly observe abundance of clusters with any number of zinc atoms, regardless of the charge or ligands in the cluster. Therefore, Figure 8 (below) is a graph that presents the abundance of all Zn_mX [6] species, with 2≤m≤11:
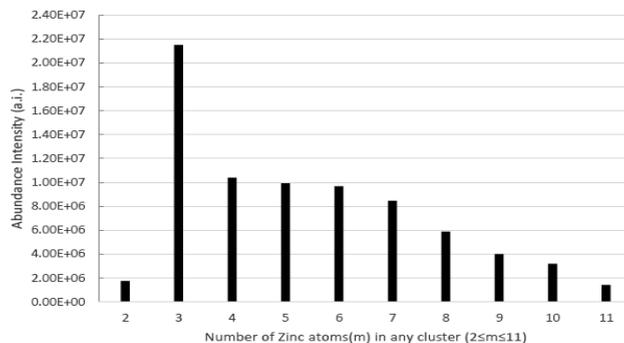
11. Speciation tendency

By interpreting the results, a simple look at Table 2 reflects the nucleation tendency of the zinc sulfate solution under investigation. The zinc compounds that are formed contain a number of zinc atoms, ranging from 1 to 11. Except in the case of $ZnHSO_4$, each zinc sulfate cluster contains 1 fewer sulfate ion than zinc ion. In addition, the variety of a zinc compound with any given number of zinc also invites attention. There are three species of cluster with only 1 zinc atom, two species with 4 and 5, and only one species with 2, 3, and above 5. This seems to suggest that Zn_4X and Zn_5X species are ones at which nucleation habit changes.

12. Oxidation tendency

Considering the charge on each identified ion cluster, all species have 1^+ or 2^+ charges. This is both a result of the FTICR-MS only detecting positively charged species, and the fact that Zn has only two valence electrons. Figure 3 presents oxidation states of identified species. All species with 3 zinc atoms or fewer, as well as all species with 6 zinc atoms or more, are doubly-charged. All are positive. Species with 4 and 5 zinc atoms display both single and double charge. This suggests that change in oxidation tendency occurs to clusters with 4 or 5 zinc atoms. This suggests that, when zinc sulfate is ionized, one sulfate ion is lost, hence a doubly-charged $[Zn_m(SO_4)_{m-1}]^{2+}$ cluster is formed. However, this is not the case for m=1, 2, 3 and some clusters with m=4, 5. For these clusters, an OH^- group is attached to the Zn^{2+} ion, thereby making the overall charge 1^+. Therefore, zinc sulfate acts as a Brønsted-Lowry acid in donating a proton to water molecules in the system as it attracts the OH group. M=4 and 5 are nucleation stages at which zinc sulfate begins to stop acting as a Brønsted-Lowry acid, and stops this proton donating mechanism at m=6.

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[6] "X" is any molecule or ion bonded with an Zn^{2+} ion in the clusters, i.e. SO_4^{2-}, HSO_4^-, H_2O and OH^-.

The outlier of the above observation is $ZnHSO_4$, which does not follow the $[Zn_m(SO_4)_{m-1}]^{2+}$ general formula and behaves as a Brønsted-Lowry base in accepting a proton from water. This may be seen as the behavior of zinc sulfate at the earliest stage of nucleation upon initial entry into the system. Noting that $ZnHSO_4$ acts anomalously because it is the only Brønsted-Lowry base among all clusters, it is therefore not considered in later interpretation of results. It is not a part of any trend described hereafter.

13. Hydration tendency

Figure 4 presents all hydrations states of all identified clusters. Examination of the graph indicates that doubly-charges species generally have lower hydration states, having at maximum four water molecules, within the range of $(H_2O)_n$ n=0,1,2,3,4 attached. To the contrary, doubly-charged species have significantly higher hydration states, having at maximum seven water molecules, within the range of n=2,3,4,5,6,7. Doubly-charged clusters clearly exhibit more varied hydration states. Hence, there is flexibility in their interaction with water. In addition to the range within which each ion cluster hydrates, the modal number of hydration states corroborates the positive correlation between cluster charge and hydration diversity. Figure 4 reveals that the mode number of hydration states exhibited by doubly-charged clusters is 2, compared to that exhibited by singly-charged clusters, which is 4. This difference in diversity is likely due to the fact that singly-charged clusters behave as Brønsted-Lowry acids, whereas doubly charged ones do not. Having one OH^- group attached seems to take up a spot for water ligands to form. Another reason for lower hydration states with smaller clusters may simply be because the size is smaller, which in turn reduces the van der Waals' force to attract ligands.

Furthermore, the trend in the number of water molecules attached as ligands is also examined. Figure 5 takes the most abundant hydration state of all identified clusters with the molecular formulae $[Zn_m(SO_4)_{m-1}OH]^{1+}$ (m=2,3,4,5) and $[Zn_m(SO_4)_{m-1}]^{2+}$ (4≤m≤11). Despite fluctuation within the doubly-charged cluster groups, singly-charged clusters generally have 3 water molecules attached, with the exception of m=5, which has 4. The most abundant doubly charged clusters generally have 6 water molecules attached, with the exception of m=8, 9, 11, which have 7. Among doubly-charged clusters, m=5 marks the increase in water affinity by being the only species attracting four water ligands. Among doubly charged clusters, the number of water ligands increases at m=8, finally forming heptahydrate.

In general, m=4, 5 are again places at which hydration tendency changes. At m=4, doubly-charged hexahydrate is formed, and at m=5, doubly-charged quadrahydrate. As a final remark, n<3 and n=5 seem extremely unfavorable as hydration states for the zinc sulfate clusters under consideration. This is indicated by the absence or low abundance of these species.

14. Abundance

Figure 6 presents the abundance of the most abundant hydration state of each cluster. It reveals that m=3, 7 are the most abundant doubly-charged ions and clusters. Hence, $[Zn_3(SO_4)_2OH \cdot (H_2O)_3]^{1+}$ and $[Zn_7(SO_4)_6 \cdot (H_2O)_6]^{2+}$ are the two most abundant species in this system. Figure 7 presents the total abundance of each cluster, regardless of hydration state. This is effective in determining the most likely cluster to form during the prenucleation state. $[Zn_3(SO_4)_2OH \cdot (H_2O)_n]^{1+}$ and $[Zn_6 \cdot (SO_4)_5 \cdot (H_2O)_n]^{2+}$ are found to have the highest total abundance, thus suggesting the likelihood of two $Zn_3(SO_4)_2$ clusters congregating and taking a SO_4 ion from another cluster to form the 2^+ cluster. Incidentally, whereas m=4,5 are critical points for significant water affinity change, m=3,6 are either immediately before or after the critical points. Furthermore, doubly-charged clusters as a whole are more abundant than doubly-charged ions. This can be explained by the loss of two $4s$ electrons. Finally, Figure 8 indicates that the abundance intensity of clusters decreases as clusters grow. This trend begins at m=3 and is followed by a drastic drop, which suggests that m=4 is where nucleation begins. The decrease in abundance intensity may correspond with the increasing energy change required for nucleation. Further computational study can test this hypothesis.

14. Conclusion

Using ESI FTICR-MS, 15mM zinc sulfate is ionized and investigated in the current study. Its nucleation tendency (relating to molecular size), oxidation tendency (relating to charge), and hydration tendency (relating to amount of water ligands and water affinity), are studied. As well as abundance of individual clusters noted. The speciation tendency suggests that nucleation of doubly-charged zinc sulfate occurs, for $[Zn_m(SO_4)_{m-1}]^{2+}$, at m=4 and m=5, based on the finding that transition from 1^+ to 2^+ charge occurs at these points. The observed oxidation tendency supports this conclusion, noting that oxidation state changes also at m=4 and m=5. It seems that upon passing the m=4, 5 range, doubly-charged clusters become significantly more water affinitive, until reaching the stable hepta-hydrate level to achieve microsolvation. The observed hydration tendency suggests zinc sulfate does not achieve microsolvation until the clusters become very large, i.e. m=8, 1321.2 g mol. This may provide molecular support as to the high solubility of zinc sulfate, given that it does not achieve solvation at smaller sizes. This may explain why zinc sulfate is very hydrophilic in macro scale, in plant, nature, or organisms, or why it may be commonly present in air pollution. Finally, the most abundant cluster species is the singly-charged $[Zn_3(SO_4)_2OH \cdot (H_2O)_3]^{1+}$. This suggests an apparent difference between zinc sulfate in prenucleation stage and at macro scale. However, the observations that m=3 is most abundant and that after passing m=3 nucleation occurs suggest that m=3 may be a unit cell of zinc sulfate clusters in nucleation. This can be the foundation for future computing of the structure of characterized clusters.

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The Master of Mood: A Comparison of Poe's *The Raven* and *The Cask of Amontillado*

Sean Fontaine

Edgar Allen Poe sets himself apart from other authors with his dark pieces and his writing style. In this paper, I propose to look at how he creates mood in his pieces, specifically focusing on his poem, *The Raven*, and his short story, *The Cask of Amontillado*. In both *The Raven* and *The Cask of Amontillado*, Poe effectively uses language to establish moods of terror, foreboding, and uncertainty.

Terror is a recurring mood in many of Poe's gothic pieces. In *The Raven*, the last two lines of stanza three "'Tis some visitor,' I muttered, 'tapping at my chamber door— / Only this, and nothing more'" (5-6) are almost a complete repetition of the last two lines of stanza one. In the first stanza, the narrator genuinely does think that there is a late visitor knocking on his door after hearing a tapping "as of someone gently rapping" on his chamber door. However, in the third stanza, the meaning of these repeated lines changes completely, as the line in stanza three is preceded by the line "to still the beating of my heart, I stood repeating" (15), which shows the internal terror felt by the narrator and that he is falsely reassuring himself that it is only a visitor to calm himself down. By repeating this same line, Poe is able not only to establish, but also to emphasize this new mood of terror, a large divergence to the calm, but also sad and gloomy mood that came before. Poe is able to create a similar mood of terror in *The Cask of Amontillado*. When Fortunato is walled up in the cellar, he is engulfed by utter hopelessness and terror. He gives off a "low moaning cry from the depth of the recess" (420), and then "furious vibrations of the chain" (420) are heard. In this case, the terror is so great, it snaps a heavily intoxicated man back into full consciousness. Fortunato's terror eventually leads him to speak the line "For the love of god" (421), a desperate plea to Montresor, anything that might convince him to allow him to escape a seemingly inextricable death. As humans are social, empathetic beings, the terror shown by the characters evokes a similar response within the mind of the reader. It is for this reason that the terror felt by Poe's characters is able to translate into the mind of the reader and create the mood of these pieces.

Foreboding is another mood that Poe is well known for creating. In *The Raven*, simple descriptions and thoughts allude to negative feelings of death and loneliness. One example is the description of burning embers, which reads "each separate dying ember wrought its ghost upon the floor" (8), twice using words connected with death, specifically alluding to "the lost Lenore" (10-11). Poe is also able to foreshadow the ending of the poem "my soul…shall be lifted nevermore!" with the repetition of "nevermore", the negativity of the word creating a sense of complete hopelessness right from the beginning. In *The Cask of Amontilado*, Poe twice creates a foreboding atmosphere by foreshadowing the death of Fortunato. As the reader already knows of Montresor's plan to kill Fortunado, there is a great irony whenever Montresor and Fortunato speak. When the nitre is causing Fortunado to cough, Montresor pretends to be concerned, while Fortunato says "[A cough] will not kill me" (90). To this, Montresor replies "true – true" (92), as he knows that Fortunado will in fact die of thirst in the cellars. Montresor later toasts to Fortunado's "long life" (101), further adding to the dramatic irony and foreboding. The Montresor family motto "*nemo me impune lacessit*" (109) translates as 'nobody insults me with impunity', which further foreshadows Fortunado's death, as insulting Montresor was exactly what Fortunado did. In both works, the foreboding is hinted at by careful selection of lines and words that foreshadow a grim event.

Poe is often able to establish a mood of uncertainty through the use of an unreliable narrator. In *The Raven*, the narrator seems like a relatively normal man living alone after losing a loved one. However, as the story goes on, he begins to converse with a raven, further escalating to shouting at it and taking the its single word "nevermore" (48) as an answer to his questions. This is a sign of madness and, since the narrator is the one telling the story, it brings a mood of uncertainty to the poem as a whole. Uncertainty is an equally important mood in *The Cask of Amontillado*. At the very beginning, the narrator states that he was insulted, and now wants to secretly kill the man who insulted him. The narrator tells us this as if it were a normal response to an insult, and so we are again shown an element of madness in the unreliable narrator. Uncertainty is the prevailing mood at the end of this story as well. When Montresor yells out Fortunato's name twice and gets no response, his "heart [grows] sick" (421). This is quite an equivocal part of the story and can be interpreted in many ways. It could be that Fortunato has finally felt the way Montresor had felt when he was insulted, or it could be because Fortunato has achieved a strange mental victory over Montresor, possibly in the afterlife. This mood of uncertainty adds to the suspense already created by the foreboding mood.

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《狼圖騰》熱銷的背後 —— 狼性與人性的多重解讀

雲惟奕

內容提要

中國在 21 世紀初起了一股"狼潮"。姜戎的《狼圖騰》在文壇上掀起了一股"狼旋風"。對此評論家各執己見,就作品中狼性和人性的關係進行了多種解讀。

仔細閱讀小說,筆者對作品中有關狼性和人性的描述產生了濃厚的興趣。在深入瞭解了狼和人的關係、姜戎對狼性的崇拜和背後的文化價值以及現實物質世界做出的批判之後,筆者把研究論題定格在對《狼圖騰》中狼性與人性多重解讀這一有待發掘的關鍵點上。

閱畢《狼圖騰》,讀者無不深深感受到了這部大書之震撼力。在參考了《狼圖騰批判》、中華讀書報、中華文學網等資料後,筆者意識到姜戎借《狼圖騰》不僅僅是在表達對草原生態問題的關注,更要提醒人們重視人與自然的關係,關注人性弱點,揭示人性異化。本文將主要從狼形象和人形象、自然中的狼與人、以及狼與人的命運這三個方面,展開對以上論點的分析。

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1. 序言

《狼圖騰》一書自 2004 年 4 月問世以來,在國內印刷 300 余萬册,更被譯成 30 種文字,在全球 110 個國家和地區發行[1]。《狼圖騰》的創作基于作者姜戎 11 年的插隊經歷,他和狼生活在同一片草原上,洞悉了草原狼的種種特徵,歷經 30 年的磨練終於寫成了這部作品。小說講述了知識青年陳陣在內蒙古草原插隊沉迷于狼的世界,一次偶然的機會掏到了一匹小狼,在飼養過程中雖然盡心盡力,最後卻不得不將小狼親手殺死。姜戎借描寫草原狼生活的種種細節,描寫了狼的命運,表現出"狼的精神",感染了無數讀者。

出版後,文學界的反響巨大,評論家們從不同的角度發表者自己的聲音,解讀著自己眼中的《狼圖騰》。在這些的聲音當中,有的評論者認爲它是"一個燦爛而奇異的存在……[是]一部情理交織、力透紙背的大書"[2],有的學者持反對意見,認爲《狼圖騰》體現了"法西斯主義,這本書讓中國人丟臉。"[3]

2. 物質和精神世界的聚焦

《狼圖騰》這本書由幾十個不同的狼的故事爲主體,通過幾個主要人物的活動將這些故事串聯起來,講述了草原狼的一生。狼群不放弃一絲一毫的求生機會,哪怕是被軍人的吉普車追得"大口出氣,大噴白沫"[4],或是在人類瘋狂的滅狼大會戰下,它們依然爲生存而不停奮鬥。在悲壯的狼的故事中,對陳陣和小狼零距離接觸的描寫更能表現草原狼頑强的生命力。蒙古草原夏天裏太陽,可以說是草原上的一大天灾,"毒日之下,小狼被一根滾燙的鐵鏈拴著,無遮無掩,活活地被暴曬著"[5],面對如此"絕境",視小狼"如子"的陳陣也束手無策。意想不到的是,小狼在忍受不了毒日的暴曬時,想出了解決方法——刨坑。小狼"撅著屁股和尾巴,拼命刨土掏洞,沙土四濺,像禮花似的從地洞裏噴出"[6],并且"越挖越瘋狂"[7],最終刨了一個"避光避暑避曬避人避危險的凉洞和防身洞"[8]。 姜戎對小狼刨坑的

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[1] " 狼圖騰", 百度百科
<http://baike.baidu.com/view/254038.htm>

[2] "《狼圖騰》",天涯在綫書庫
<http://www.tianyabook.com/langtuteng/lttqy.htm>

[3] 張英:" 爭議《狼圖騰》",南方周末,2008 年 4 月 2 日
<http://www.infzm.com/content/6901>

[4] 姜戎:《狼圖騰》,武漢:長沙文藝出版社,2004 年 4 月第一版,第 319 頁

[5] 姜戎:《狼圖騰》,武漢:長沙文藝出版社,2004 年 4 月第一版,第 214 頁

[6] 姜戎:《狼圖騰》,武漢:長沙文藝出版社,2004 年 4 月第一版,第 219 頁

[7] 姜戎:《狼圖騰》,武漢:長沙文藝出版社,2004 年 4 月第一版,第 220 頁

[8] 姜戎:《狼圖騰》,武漢:長沙文藝出版社,2004 年 4 月第一版,第 214 頁

動作進行了細緻生動的描寫，使機智、頑强的小狼形象躍然紙上，令人驚嘆，更令人佩服。

相比較而言，脫離蠻荒，步入文明的人類在小說中的形象又如何呢？小說中的人類可以分爲兩種，一種是愛護草原的土生土長的蒙古人，一種則是破壞草原，一心想從中牟利的外來戶。姜戎花費了相當的筆墨著力表現了後一種人。面對草原的豐富資源，他們大開殺戒：殺天鵝，殺野豬，殺獺子，把能吃的統統吃了一遍。不能吃的，像是芍藥根，就"掘地三尺"[9]，全部搬走。小說中的外來戶，追求的是物質上的滿足，是填飽肚子，是花錢享受。他們"連自己的家鄉都不愛惜……到了异地他鄉，就更加肆無忌憚地開始掠奪搶劫"[10]。通過巧妙的對比手法，作者將人類貪得無厭的醜陋展露無遺。狼群和人類，前者彰顯出追求最大生存機會的頑强和聰明個性，後者則是毫不掩飾地掠奪占有享用一切的形象。對比之下不禁讓人思考：人類真的走出野蠻時代了嗎？

姜戎除了重點描述了人與狼在物質世界中的形象，更藉此探討了他們的精神價值觀。狼群追求目標有著骨子裏的執著，小說第五章裏的"群狼雪夜獵軍馬"，集中表現了這種精神。這場圍獵，不再是單純的獵食，而是對人類瘋狂地掏狼崽、奪狼食的報復。借著白毛風，趁著人們防守疏忽，狼群瘋狂地攻擊著牧場的馬群——"大屠殺的血腥使瘋狂的狼群異常亢奮殘忍，它們顧不上吞吃已經到嘴的鮮血活肉，而是不顧一切地撕咬和屠殺"[11]、"狼群一次又一次壓著馬群往南跑……就是鉚著勁，不惜一切代價把馬群攆到南邊的大泡子裏去"[12]，甚至用上了自殺性攻擊手段，直至最終馬群全軍覆沒。這場相對于人類來說慘烈的厮殺，却是狼群執著精神的體現，哪怕是要付出血的代價，也要直奔目標，不達目的決不罷休。

這種精神更體現在小狼對自由的追求上。爲了保住小狼的飼養權，"陳陣不得不聽從烏力吉的意見，將小狼用鐵鏈拴養"[13]，于是，"小狼怒氣衝衝地與鐵鏈戰鬥了一個星期，半段鐵鏈一直被咬得濕漉漉的"[14]，縱使後來接受了鐵鏈存在的事實，小狼却始終沒有放弃對自由的追求。它寧可被勒死也不願意任由人牽著走，

哪怕在搬家時被牛車脫著走，哪怕是"堅硬的沙路像粗砂紙，磨著小狼爪，鮮血淋漓"[15]，哪怕是"被項圈勒破了喉嚨……氣息奄奄，嘴裏不停地噴血"[16]，小狼依然想盡辦法，掙脫羈絆，追求自由，堅決不讓人類隨意駕馭自己的生活。

相比狼群，小說中的人類形象則是有著不同追求。如狼群一般信奉騰格裏的蒙古人，他們大多保持著傳統的游牧生活方式，過著順應自然的生活。然而爲了推廣城市化，爲了建設人類家園，很多不懂草原的農區人、漢人來到了草原，處處顯示出骨子裏的專斷跋扈，以及對超越自然、掌控自然的能力的追求。面對自然資源，他們眼中只有單純的掠奪以及破壞。農區來的場領導包順貴就是一個典型，他一心一意只想打狼，完全不理會那些知曉狼群重要性的蒙古獵手的勸說。除了打狼，包順貴堅信草原的一切生靈是爲了提升草原牧民生活所需而存在的，他允許漢人打狼、打獺子、打天鵝，還驕傲地說，"人能得著的寶貝才是寶貝，得不著的就不是寶貝了"[17]，力主在天鵝飛離額侖草原之前打下來做美食。通過對人類行爲和語言的描述，姜戎寫出了人類自視爲萬物之主，自高自傲並且占有享用一切而不知感恩的醜惡形象。

縱使《狼圖騰》中塑造了衆多的狼和人的個體，歸根到底，姜戎所要呈現給讀者的就是兩類主要形象：狼群和人類。前者堅韌不屈，機智勇敢，而後者却貪婪與自私，不可一世。

3. 二重命運——自然律法中的狼群與人類

人也罷、狼也罷，地球上的任何生物，都是大自然的一部分。小說中的狼順從天神"騰格裏"和大自然的規律，力求與大自然和諧並存——草原養活了狼群，狼群也保護了草原。"沒有狼，光老鼠和野兔幾年工夫就能把草原翻個兒"[18]，然而"有狼在它們就翻不了天"[19]。與此同時，狼群在灾難來臨、牲畜成片死亡時便成了草原上的清道夫，避免了草原上爆發瘟疫。

按照蒙古老人畢利格的話說，"在蒙古草原，草和草原是大命，剩下的都是小命，小命要靠大命才能活命，連狼和人都是小命……把草原的大命殺死了，草原

[9] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 232 頁
[10] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 232 頁
[11] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 46 頁
[12] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 47 頁
[13] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 190 頁
[14] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 190 頁
[15] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 324 頁
[16] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 324 頁
[17] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 181 頁
[18] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 160 頁
[19] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 160 頁

上的小命全都沒命！" [20] 而在草原上，只有草原狼和真正的蒙古人才認識這一真理。成吉思汗每次打圍總要放掉一小半，才使得 "蒙古人打圍打了幾百年……年年都有得打" [21]，而這本身 "就是學了狼，不殺絕。" [22] 仔細一想，畢利格老人的話和《莊子‧達生》中的 "天地者，萬物父母之也" [23] 同出一轍。大命小命論極具哲理，發人深省。姜戎借著畢利格老人之口，傳達出高高在上的神明——騰格裏所定下的自然法則，振聾發聵，至今仍在告誡世人，警醒世人。

不幸的是，闖入草原讓狼群又怕又恨的生靈——農區戶和外來人口，並沒察覺到自己與自然律法則背道而行。他們以掌控者的姿態，在自然界中肆意妄為，一味地奪取，毫不顧忌破壞後所帶來的負面影響。狼群在這些外來人口的破壞下，被迫改變生活方式，最後竟不得已沖越邊境，離開自己曾經的家園。

就連整部小說中最吸引人的故事——主人公陳陣飼養小狼這一 "科學研究"，都在表現著 "人類高于自然" 的高傲態度。臺灣中央研究院副研究員錢永祥給予《狼圖騰》的評價是，"作者被狼的尊嚴、智慧和野性所震撼，却用自己折磨一隻小狼的故事貫穿全書，殘酷誠實地表現了人類與動物關係的多種曖昧和矛盾" [24]。姜戎也曾公開聲明，寫書的衝動源自 "對因我而死的七條小狼崽的深深愧疚。特別是那條我親手養大又不得不親手把它送上騰格裏的小狼。30 多年來，那條可敬可愛可憐的小狼，一直是我心中永遠的痛。" [25] 僅僅是因為對個人對自然、對狼的著迷，陳陣（姜戎）便不顧蒙古人敬狼之情，不聽畢利格老人的勸阻，觸犯禁忌，做出有悖于草原倫理的事情——養狼，最終使小浪悲慘喪命。在陳陣（姜戎）把小狼送上騰格裏之前，畢利格老人的怒吼 "你們漢人永遠不明白蒙古人的狼" [26]，以及上馬後那狠狠地一鞭，都揭露了冠冕堂皇的 "人類科學研究" 本質上就是人類要强迫、控制、掌握自然，是在違背自然律法，赤裸裸地征服自然。這一行為在本質上和入侵草原的那些 "建設兵團" 沒有任何區別。

沒有大自然就沒有生命，也就沒有了狼與人。然而，在對待大自然，對待自然律法的時候，狼與人選擇了不同的道路。狼群選擇了順應自然，力求與自然達成和諧，所以能够發展成爲草原上的一代君王，表現出了狼群的大智慧。而人類則選擇了違逆自然，為謀獲小利而借助科學技術，最後却自食惡果，體現出了小聰明，大愚昧。

4.二重結局——悲劇中的狼群與人類

著名文學家白燁對《狼圖騰》的評價是 "這是一部狼的贊歌，也是一部狼的挽歌。" [27] 這一部 50 萬字的小說，記錄了草原狼的興衰，更記錄了草原的興衰。狼群因著人類的入侵以及大肆捕殺，失去了昔日的家園、寧靜的生活、豐富的食物以及許許多多的同伴，它們甚至因此淪落到面臨著絕種的地步。

然而，《狼圖騰》著力表現的不僅是草原狼的悲劇，更是人類的悲劇。正如同思想家恩格斯所說，"人類征服自然的每一次勝利，都遭受到大自然的報復" [28]，小說中的人類爲了發展農業，爲了使用草原上 "空閑的土地" [29]，成功征服了額侖草原，成功地開墾農田後，迎來的是 "沖天的沙塵黃龍，遮天蔽日" [30]，迎來的是 "草場……沙化" [31]，迎來的是 "游牧文明徹底終結" [32]。這無疑是人類史上的一大悲劇。

姜戎在故事的鋪排上可謂是獨具匠心，以狼的一生和人的命運發展爲雙重綫索，從群狼的生活起筆，以飼養小狼的故事爲核心情節，由小狼的慘死再聯繫到狼群的沒落，講述了草原狼的悲壯一生。與此同時，小說揭示了人類征服自然的過程和結果——當陳陣多年後回到內蒙古，見到的不再是豐茂的草場，遍地的牲畜，而是非法獵殺，以及被破壞得面目全非的草原。人的悲劇導致了狼的悲劇，狼的悲劇也就是整個大自然、整個世界悲劇的縮影。讀者讀罷，不由得嘆息與深思：造成這個悲劇的根本因素是什麼呢？

《狼圖騰》的情節跌宕起伏——狼與人的一次次鬥智鬥勇，小狼一次次的 "惹是生非"，讓讀者看得既

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[20] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 29 頁

[21] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 27 頁

[22] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 27 頁

[23] "天人合一"，百度百科 <http://baike.baidu.com.view.4259.html>

[24] "狼圖騰"，中學生網站 <http://www.shs.edu.tw/search_view_over.php?work_id=11129373>

[25] "相關連接"，中華讀書報，2005 年 6 月 8 日第 10 版 <http://www.gmw.cn/01ds/25-06/08/content_248791/html>

[26] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 350 頁

[27] "《狼圖騰》"，天涯在綫書庫 <http://www.tianyabook.com/langtuteng/lttqy.htm>

[28] "思格恩經典名言格言警句"，作文網 <http://zuowen.chazidian.com/zuowensucai19276/>

[29] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 408 頁

[30] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 408 頁

[31] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 408 頁

[32] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 408 頁

激動，又不時膽戰心驚。除此之外，小說的情節也兼有夾雜感情的樂章——母狼喪子後呼喚小狼的淒涼嚎叫在陳陣的"解讀"下極具感情色彩，使人心緒難平。在故事的尾聲，姜戎在"理性探掘"篇中描寫了陳陣數年後重回草原並在狼洞前對當年"罪行"的懺悔的內容。由於自己的衝動奪去了七條小狼的生命，陳陣終於面對"乾黃破敗的'草原'"[33]發出了由衷的感慨和大徹大悟後的悔恨。這一段描述說明了狼與人悲劇的關係，為整部故事畫上了句號。

5. 總結

讀完《狼圖騰》，就像閱讀了一部悲愴恢宏的人性畫卷。古今中外不乏借描寫動物反映人性的文學作品。近年來，也有越來越多的作家借描寫動物來寄托人類在現實中的嚮往，同時揭示生存之道。唯其逼真，更具震撼力。姜戎的《狼圖騰》通過人類的視角，表現了草原狼的形象以及和人的形象的反差。它讚揚了草原狼的精神，對狼的精神推崇備至，同時也諷刺了人性的貪婪和驕傲。作者甚至認為中華民族的圖騰不應是龍，而是狼。這一立論，無疑在讀者中會產生了極大的震撼效果。

《狼圖騰》的熱銷曾引起了國內讀書界的巨大爭議和眾多點評。筆者認為，一個主要原因就是作品在內在精神上，"*貫通了草原古老神靈騰格裏與千年草原大地的脉*"[34]，彰顯了"順應天理蒙福，逆于天理在劫難逃"樸素但深刻的道理。筆者還認為，姜戎對人類和人性進行反諷批評的目的，就是想震醒世上弱性而不自知的人類，呼籲他們要當機立斷，反省并摒弃自身的狂妄，重建出一個正面、向上、順應自然的精神和物質的家。也只有這樣，人類才有可能擁有充滿希望的未來。

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[33] 姜戎：《狼圖騰》，武漢：長沙文藝出版社，2004 年 4 月第一版，第 373 頁

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How does the use of tick imagery characterize Grenouille in Suskind's *Perfume*?

Tiffany Wong

Jean-Baptiste Grenouille, in Suskind's *Perfume*, is presented as both the personification of childhood deprivation and the epitome of abomination. Rejected by his mother at birth, Grenouille is left to die among a fetid pile of entrails beneath his mother's fish-gutting table. Grenouille is like the tenacious tick that clings instinctively to its host when he resists his mother's desire for him to perish. A lost orphan who inadvertently sends his mother to the gallows, Grenouille is obsessed with, yet will never receive, his mother's love. Suskind creates this paradoxical circumstance surrounding Grenouille's birth to emphasize his fundamental need for love, security, and identity. When Grenouille sets out to distill the perfect perfume from his victims to "make the world admire him" (248), he is a parasite that empties others. Ticks have a keen olfactory sense and are solitary creatures that feed on their hosts for survival[1]. Likewise, Grenouille is a pillager of scents, which he robs from virginal girls in order to obtain proprietorship over a scent which would allow him to gain an identity for himself. Suskind uses this imagery of a tick to characterize Grenouille's physical and emotional deprivation which foster his animosity towards those around him. The tick analogy also reinforces his extraordinary sense of smell, which marks him as fundamentally different. It also explores his inherent dependency on other people, which mirrors a tick's dependency on the blood of other creatures to survive.

Suskind uses the unwanted and abandoned tick as a metaphor for the physical and emotional deprivation of Grenouille's childhood, which fuels his misanthropic attitude and rejection of society. Cast off or exploited by his caretakers throughout his childhood, Grenouille's remaining hope of survival lies in being "as content as a tick…living off a tiny drop of blood plundered years before" (21). Suskind's simile vividly presents Grenouille's childhood malnutrition and physical deprivation as the imagery of a tick struggling to survive upon such a meagre portion of blood heightens Grenouille's physical struggle to stay alive upon "a minimum ration of food and clothing" (21). Grenouille's deplorable upbringing foreshadows his resentment towards the people around him.

Although Grenouille appears to survive this battle against starvation and neglect, his childhood underdevelopment is not without its scars. Like a tick, Grenouille is "small, hunchbacked, lame, ugly, shunned, an abomination within and without" (248). Through the portrayal of Grenouille's repulsive appearance, Suskind reveals the tragedy of his physical underdevelopment, implying that his misanthropic and contemptuous attitude towards the people around him stem not from his innate animosity against mankind *per se*, but from his physical deprivation and indignation against the society that denied him in the first place.

Moreover, Suskind uses tick imagery to represent Grenouille's innate need for emotional satiation from other people, while not realizing that this act further alienates him from a society that perceives him as a pest. Bereft of affection in an orphanage, Grenouille is forced to dispense with "security, attention, tenderness, [and] love…just to go on living" (22). Hence, Grenouille lacks any emotional bond with any other human being, emphasizing his utter exclusion and need for emotional attachment. Assigned to the care of the wet nurse, Jean Bussie, he is rejected for "[stuffing] himself" on her and "pumping her dry to the bones" (8). Grenouille's ravenous appetite for a mother's milk, albeit that of a surrogate, resembles that of a voracious tick that continuously feeds on its host. The comparison between Grenouille and a blood-sucking tick foreshadows his eventual parasitic relationship with other people, which emphasizes his tragic destiny of being invariably at odds with those around him, never to experience tenderness or human love. His rejection by Jean Bussie not only implies that he is prematurely weaned, but also suggests that his physical and emotional underdevelopment forces him into emotional detachment. Like the "hermit crab" that hides in its own shell, Grenouille withdraws from company and retreats into the "innermost empire" of his mind, where he drowns himself in the vast repository of scents he possesses, "his body [writhing] with voluptuous delight" (128) as he lies there "lolling with satiation" (136). Grenouille's inherent desire to fill himself brimful with redolence echoes the need of a tick to fill itself with blood, emphasizing the innate emptiness of his "raven-black soul" (249). By caressing the scents stored within himself, Grenouille fulfills his need for emotional love, which underscores the enormous chasm between him and genuine affection. Sukind's use of tick imagery masterfully portrays Grenouille's reclusive character, which suggests the consequences of deprivation on his personality, leading to misanthropy towards all mankind one the one hand and, at the other extreme, his narcissistic behavior and profound self-preoccupation.

In addition, comparing Grenouille's to a tick emphasizes his extraordinary sense of smell and his parasitic relationships with those around him, which draws the reader's attention to the fundamental difference between him and other people. Like a tick that locates its host by detecting body odors, "[Grenouille] had [already] grasped his surroundings olfactorily [at the age of six]" (27) where he "devoured everything…sucking it up into him" (39).

[1] "Life Cycle of Hard Ticks that Spread Disease." *Centers for Disease Control and Prevention.* N.p.,n.d. Web. 30 Aug. 2013. <http://www.cdc.gov/ticks/life_cycle_and_hosts.html>.

This vivid imagery of a tick gorging itself on smells prepares the reader for Grenouille's downward spiral to become a notorious murderer – all for virginal scents. As Grenouille "sucked in the undiluted fragrance of [the girl]" (44) and "swept his flared nostrils across her" (45), Suskind's use of comparing him to a tick feeding on the blood of its host to describe his murderous crimes evokes a response of disgust and revulsion in the audience, but the gruesomeness is tempered by Suskind's preoccupation with olfactory details. This allows the audience to enter Grenouille's perception, a world delineated by smell where the essence of an individual's existence lies within the "aromatic soul" (193). Like the tick that is a parasitic blood pump, Grenouille does not see his actions for what they are. Instead, "he had only one concern – not to lose…her scent" (45). Grenouille's inability to feel guilty about his actions and his absolute indifference towards the lives of his victims fully demonstrates his parasitical relationship with other people. Therefore, he has no qualms about 'emptying' virginal girls to replete himself. Moreover, Grenouille perceives himself as entitled, as the "omnipotent god of scent" (161), to rob his victims of their celestial aura in order to enlighten the world through his "divine" (248) and awe-inspiring creation. Through Suskind's use of hyperbolic diction and tick imagery to portray Grenouille's surreal sense of smell and innate capacity to violate the lives of other people without remorse, Suskind implies that Grenouille harbors an inherently inverted value-system, emphasizing his fundamental opposition to mankind.

Furthermore, Suskind uses tick imagery to symbolize Grenouille's ironic dependency on his victims to compensate for his flawed identity. It is ironic that Grenouille, a murderer that infringes upon the lives of other people, ultimately becomes enslaved and dependent on those whom he capitalizes upon. Lacking a unique scent that would mark him as a fully developed individual, Grenouille could only ever "[possess] his own scent" (197) through reaping the aromas of virginal girls to obtain a secure identity and social acceptance. As a result, when Grenouille finally strips Laure of her supernal aura, he "had never felt so fine in all his life, so peaceful, so steady, so whole and at one with himself" (226). Suskind uses the irony of Grenouille's tranquil state of mind after having murdered the girl to imply that the "peace [which] filled his heart" (227) arises from the filling of his innate emptiness and the prospect of walking "in their midst as a human being among human beings" (159). The juxtaposition of Grenouille's torment without his own odor and his exhilaration at having gained that "vital [scent]" (160) reveals his actual understanding that he had always been less than a "properly proportioned human being" (164). This implies that beneath his façade of confidence and "contempt" for those around him, Grenouille is essentially an insecure and vulnerable individual with low self-esteem, further emphasizing his flawed identity (160). Therefore, Suskind uses the imagery of a tick to symbolize Grenouille's ironic dependency on his victims to compensate for his imperfect identity, suggesting that he is not simply a murderer as the surface seems to suggest, but rather, a castaway who desires, but will never attain, entitlement to genuine love.

Set in the era of Enlightenment during eighteenth-century France, *Perfume* is, ironically, not a story of acceptance but a story of intolerance and ostracism towards people who are different from the standard norm. Caught in the midst of this rigid value system, Grenouille is a tick-like orphan who cannot belong amongst other people. His lack of a scent and his supernatural olfactory ability both mark him as an alien in his society. Precisely because of this peculiar fascination with "the primitive organ of smell" (15) during an era replete with values of progression, liberty, and reason, he is both an aberrant individual and an anachronous character who is preoccupied with his search for belonging and acceptance – the fundamental emotional need of humans. It is Suskind's intention to create this indelible persona who, albeit abominable, remains someone whom readers irresistibly empathize with. This may imply that in contemporary society, forbearance and the willingness to accept differences are perhaps the greatest virtues of all.

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Organisms in Modern Beer Making and Ancient Chinese Winemaking: A Comparison

Jonathan Tsang

1. Introduction

The first alcoholic beverage in China was most likely created about 7000 years ago. This beverage was a fruit-based wine, and a number of ancient Chinese texts contained records about the wine-making process. Fruit wines were the first to be discovered due to the high sugar content necessary in facilitating fermentation. The skin of the fruits would also be a suitable medium to inoculate the various microorganisms, or yeast, which is the crucial ingredient in the creation of alcohol. The *Pu tao jiu fu* (蒲桃酒賦), written by Yuan Wenhao (元問好, 1190-1257 CE), contains records of a grape-based wine, while the *Gui xin za shi* (癸辛雜識), written by Zhou Mi (周密, 1232-1298 CE), includes descriptions of a pear-based wine. By this period in Chinese history, winemakers had refined their methods to begin brewing with substrates that had significantly lower sugar content. Similarly, in the Ancient Near East, the Sumerians and Egyptians had also begun brewing the predecessor of what would become beer.

This evidence demonstrates that, even with different methods, substrates, and organisms, both ancient civilizations utilized the same reoccurring biochemical processes crucial in rice wine and beer brewing. However, the differences in the methods, substrates, and organisms these two civilizations employed are what ultimately differentiates the characteristics of Chinese rice wine and Western beer that are so distinctive today.

This research offers a short comparison of the effects different kinds of microorganisms had on the methods and substrates used in ancient Chinese rice winemaking and modern beer brewing. These two beverages will be compared because they are analogous equivalents in terms of composition (both are grain-based alcoholic beverages) and the biochemical processes involved. The implications and consequences of using these different microorganisms will also be explored, as many of these biochemical processes still have applications in the food and alternative energy industry today.

2. Starch and Saccharification

In order to understand how organisms interact with the substrates used in winemaking and beer brewing, a basic understanding of the biochemical processes employed is vital. In general, the processes involved in the creation of grain-based alcoholic beverages begin with saccharification, followed by fermentation.

The carbohydrate structure manipulated in rice wine-making and beer brewing is called starch. Starch consists of two components: a straight end called amylose and a branched end called amylopectin. Amylose and amylopectin consist of the same basic units (glucose), but the difference in the way these units are joined is responsible for the difference of the structure of the molecule.

In order for the starch to be converted into alcohol, it must first be broken down into its most basic unit, since fermentation cannot occur with starch alone. This process is known as saccharification or starch hydrolysis[1]. The enzyme used to break down starch into glucose (amylase) occurs in three different forms, called alpha-amylase, beta-amylase, and gamma-amylase. Alpha-amylase can only hydrolyze amylopectin, creating glucose ("Alpha Amylase"). Beta-amylase, in contrast, can only yield maltose (a molecule that consists of two glucose molecules) when amylose is hydrolyzed. If glucose is desired from maltose, another enzyme (maltase) is utilized instead ("Beta Amylase"). However, the third type of amylase, gamma amylase, has the capabilities to hydrolyze both components of starch. The significance of this property has several implications, which will be explored.
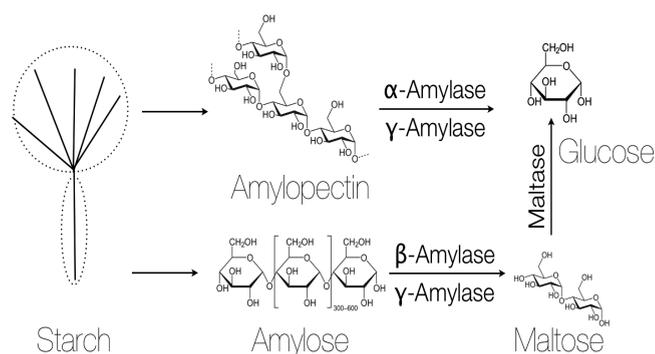

Fig. 1 – Products of Starch

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[1] Hydrolysis refers to the cleaving of chemical bonds in the presence of water.

3. Fermentation

After the starch has been reduced to its simplest form, fermentation can occur. Cells undergo a process known as aerobic respiration to synthesize energy (otherwise referred to as ATP) in order to sustain their life processes. Oxygen and glucose are the primary reactants for this biochemical process. However, in the absence of oxygen, there are a number of organisms (yeast being one example) that can still synthesize energy from glucose. This process is called fermentation. In addition to the energy that is released, alcohol/ethanol[2] and carbon dioxide are also created.
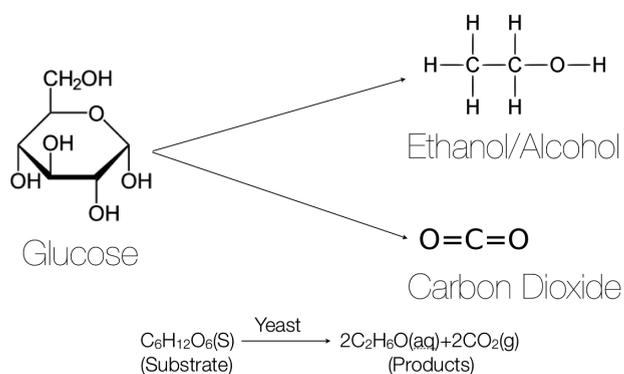

$$C_6H_{12}O_6(S) \xrightarrow{Yeast} 2C_2H_6O(aq)+2CO_2(g)$$
(Substrate)   (Products)

Fig. 2 – Anaerobic Yeast Fermentation

4. Modern Beer Making

The fundamental difference between Chinese winemaking and modern beer making is the way organisms are used. Beer making techniques evolved to utilize homogenous organisms, in contrast to the heterogeneous concoction of various yeasts, fungi, and bacteria found in Chinese winemaking. A general overview of the brewing process typically proceeds as follows:

Wash Grains ➡ Soak ➡ Boil ➡ Grind ➡ Break ➡ Ferment ➡ Store

- Wash Grains: The grains are washed to eliminate foreign contaminants. These grains can include rye, barley, rice or wheat.
- Soak + Boil: Grains are soaked and then boiled in order to make the starchy component more accessible to hydrolysis and fermentation.
- Grind: The grains are ground down to expose more surface area to the enzymes.
- Break: Grains are hydrolyzed, thereby yielding the simple sugars glucose and maltose.
- Ferment: The sugars are converted to alcohol.
- Store: The beverage is stored and ready for consumption as required.

The three primary organisms involved in beer making are malt, hops, and yeast. Malt aids in the hydrolysis (break step) of the starch, while hops both flavor and aid in preservation. Yeast allows fermentation of the sugars to occur.

Malt is germinated barley and contains a high quantity of both alpha- and beta-amylase that hydrolyzes starch. For hydrolysis to occur, the malt must be kept at temperatures that range from 130-168°F. The optimal temperature is 150°F, this is the upper and lower limit for the respective amylases' peak activity. Counter-intuitively, the product of beta-amylase is also an inhibitor of the enzyme itself. Once maltose concentration reaches about 7 percent, the hydrolysis of amylose is severely diminished. Moreover, alcohol has been shown to severely diminish the enzymatic functionality of yeast once concentrations reach close to 10 percent. It is these inhibitive qualities of maltose and alcohol that contribute to the 3-4 percent alcoholic content in beer.

Hops are the flowers originating from the hop plant (*humulus lupulus*). Hops carry out various functions, which regulate the production of beer. In addition to providing beer with a bitter taste that balances the sweetness from the malt, hops also contain antibacterial properties that help to eliminate any foreign contaminant that might impede the brewing process. It also preserves the beer from any sort of spoilage ("Iso-Extract").

The fermentative aspect of brewing can be attributed to yeast. Yeast is produced by creating an axenic culture. An axenic culture is created when a mixture of microorganisms known to contain yeast is found. The mixture is continuously diluted with water until yeast can be isolated. The unnecessary microorganisms are disposed of and the yeast is given growth culture, thereby allowing it to multiply to an industrial scale. This technique has been in use since the late 19th century, and records even show detailed instructions on the production of such a culture.

It is worth noting that while yeast possesses mild hydrolytic capabilities, a significant amount of time (3-5 days) is required for the yeast to break down the starch. This explains the need for organisms with much greater hydrolytic capabilities.

5. Chinese Winemaking

The primary difference between Chinese winemaking and modern beer making is the integration of the hydrolysis and fermentation steps. This is because the microorganisms accounttable for these two steps are all mixed in together into a concoction of fungi, yeast, and bacteria. This concoction is referred to as "ferment" or *qu*（麴）.

Several ancient texts contain detailed steps concerning the creation of the ferment, such as the *Bei shan jiu jing*（北山酒經）, written by Zhu Gong（朱肱）around the 11th to 12th century:

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[2] Ethanol (sometimes referred to as ethyl alcohol) is a type of alcohol.

Number	Task
1.	*Wo chiang* 臥漿. Prepare steep water from wheat; allow it to turn sour.
2.	*Thao mi* 淘糜. Wash glutinous rice with running water till clean.
3.	*Chien chiang* 煎漿. Boil steep water until the right acidity and consistency is obtained.
4.	*Thang mi* 湯米. Soak cleaned rice in hot steep water for four to five days; drain water.
5.	*Chêng chhu mi* 蒸醋糜. Steam sour rice, spread on table to cool.
6.	*Yung chhü* 用麴. Prepare inoculum with *ferment* and steamed rice.
7.	*Ho chiao* 合酵. Take leaven (yeast) from an active fermentation or use predried material.
8.	*Thu mi* 酘米. Prepare fermenting batch: mix sour steamed rice with malt, yeast and *ferment* in jar and layer in some rice steep water.
9.	*Chêng thien mi* 蒸甜糜. Steam clean, prewashed sweet rice, and cool on table.
10.	*Thou ju* 投醹. Add additional charges of steamed rice as needed depending on season.
11.	*Chiu chhi* 酒器. Prepare pottery jars by washing and curing with oil.
12.	*Shang chhao* 上槽. Transfer fermented mash on trough for pressing.
13.	*Shou chiu* 收酒. Drain, press and collect wine in jars.
14.	*Chu chiu* 煮酒. Steam jars to stabilise the wine, cool slowly (and seal).
15.	*Huo pho chiu* 火迫酒. Fire-pressure wine: wine in sealed jar is incubated in heated chamber.

Fig. 3 – Creating the Ferment (Huang 186)

The ferment exists in either brick, granular, or cake form. Each component of the ferment has a specific purpose in Chinese winemaking. The fungi hydrolyze the starch into sugars, the bacteria affect the aroma and taste of the wine, and the yeast ferments the sugars. These components are equivalent to the malt, hops, and yeast used in modern beer making.

There are also detailed instructions on how to create ferments in the *Qi min yao shu* (齊民要術), written in the 6th century. The title of this book roughly translates as "essential skills of the organized citizen". One can infer that winemaking must have been widespread and prevalent in Chinese culture if it was considered an "essential" skill. To create the ferment, equal ratios of stir-fried, raw, and steamed wheat were added together. Steaming the wheat would ensure that there was enough moisture in the wheat to allow various bacteria and fungi such as those in the *Aspergillus* and *Rhizopus* genus to proliferate, but preventing the ferments from becoming too syrupy.

The wheat was ground, mixed, and then turned into dough with the addition of water. The cakes were formed and then transferred to the incubator room to be spread on the floor. Since the ferments would always be inoculated in the incubator room, the air would be saturated with the same mixture of fungi spores and bacteria, allowing a consistent inoculation rate. At 7-day intervals, the cakes would be turned and then piled in such a way to allow the maximum amount of surface area to be exposed to these microorganisms. Finally, the ferments were cured in a jar and then strung out, ready to be dried in the sun (Huang 198).

The presence of fungi is the single most important factor in allowing Chinese wine to have a much higher alcoholic content. The fungi posses a unique type of amylase called gamma-amylase, which is not found in any of the organisms used in modern beer making. The most important genus of fungi in the ferments, the *Rhizopus*, is responsible for the majority of the hydrolysis that occurs during the winemaking process. Gamma-amylase is not only less sensitive to alcohol than beta-amylase, but also yields glucose instead of maltose from amylose. At high concentrations, maltose inhibits the activity of beta-amylase until all hydrolysis has ceased. The attribute mentioned above

ensures that the beta-amylase can still operate at full capacity, thus allowing Chinese wine to have a much higher sugar content. The heightened sugar content consequently results in more sweetness and a higher alcoholic content in the beverage.
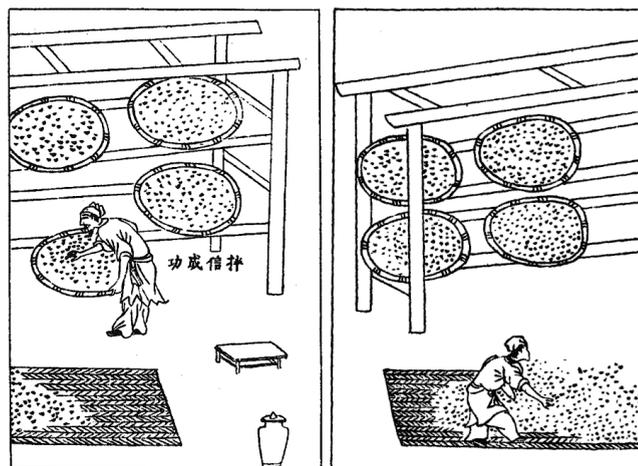

Fig. 4 – The *Tian Gong Kai Wu* (天工開物) is an example of an ancient text that includes diagrams on ferment preparation (Huang 198-200).

6. Analysis

Climate played an important role in determining the technique that used a homogeneous range of organisms employed by modern beer makers. Its origins can be traced back to the climatic conditions of Sumeria and Egypt. It is assumed that the weather would have been too dry to encourage the development of molds that prohibited a ferment-like mixture from forming. Additionally, wheat has a hard outer casing that needs to be ground down before it can be boiled, meaning that significant processing was required in order for the starch to be exposed. In contrast, the Chinese had access to rice, which was soft enough to allow water to enter the grains easily without the necessity of grinding. Accordingly, the starch would be gelatinized, allowing hydrolysis to occur easily from the enzymes of the fungi. The use of soft grains, coupled with hot and humid weather, also encouraged the growth of mycelium, further liquefying the grains, thereby creating an environment suitable for yeast to proliferate (Huang 352).

The differentiation in the methods utilized by the two civilizations also affected the end-products in profound ways. Since the Chinese ferments contained gamma-amylase, the enzyme that is extremely resistant to the inhibitive traits of maltose and alcohol, Chinese winemakers could afford to create wine with a significantly higher alcoholic content (11 to 12 percent) when compared to beer. This is worth noting, since the Chinese had essentially created an alcoholic beverage that has the same alcoholic content as grape wine without distillation, but

using grains which have very little sugar when compared to grapes and other fruits. Furthermore, the yeast utilized by the Chinese had become conditioned to have a high alcohol tolerance of up to 15 or 16 percent. In addition to the molds and yeast in ferments, the use of bacteria also altered the flavor of the wine in subtle ways, allowing much more variation among wines of the same type (Huang 606-7).

7. Conclusion

The ancient knowledge of using and creating ferments has applications in other fields besides food science. Alternative energy is becoming increasingly necessary in a world of rapidly depleting fossil fuel resources. Carbon emissions around the world are also increasing at an exponential rate, contributing to the greenhouse effect that is responsible for the gradual warming of Earth's mean surface temperature. Plant-based ethanol is one of the most feasible replacements for fossil fuels for use in internal combustion engines. Plants are a renewable source of energy as they can be harvested and replanted in frequent cycles. Plant-based ethanol also emits less greenhouse gases than fossil fuels, further making it a viable alternative. By integrating the hydrolysis and fermentation stages, a combination characteristic of the ferments use in Chinese winemaking, ethanol producers may benefit greatly. They would not only be able to save money and resources, but also the time required to generate a self-sustaining throughput of usable fuel. Once ethanol plant operators can discover how to implement quality-control protocols for the microorganism ecosystems within the ferments, more output energy can be yielded than the input in the production of the ethanol, improving efficiency and reducing waste.

Most importantly, using a heterogeneous range of organisms would allow brewers and plant operators alike to resist factors detrimental to the hydrolysis and fermentation process. For example, if a species of yeast is found to be vulnerable to some environmental factors, the users who use only that type of yeast would be incapable of producing any ethanol at all. However by using ferments, producers will be less affected by external factors, since the other organisms within the ferment can carry out fermentation as usual. Hence, it can be concluded that ferments could become a more efficient means of creating alcohol.

Ferments have played an important role in brewing throughout China's history. Its combination of fungi, yeasts and bacteria has been vital in determining the iconic sweetness and sharpness of rice wine still enjoyed today. On the other side of the world, the introduction of homogeneous organisms, step by step, was crucial in endowing beer with its unmistakable starchy flavor. Although these two civilizations were separated by geography, they both manipulated the same biochemical processes, albeit with different techniques and organisms.

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柏拉圖和商鞅理想統治方式的異同

張藹文

中國古代歷史上，秦國成功地統一了中國而且產生了絕對的中央集權。這一切要歸功於中國古代著名的政治家和改革家商鞅。他在秦國進行的"商鞅變法"，成為秦國統一中國的基礎並為日後的中央集權制度提供了肥沃的土壤。 商鞅"是戰國中期法家的著名代表人物，傑出的政治家、軍事家和思想家"（*李存山，1*）。在西方哲學史中，蘇格拉底其門徒柏拉圖，以及柏拉圖的學生亞里士多德，都是西方哲學的奠基人。"柏拉圖是西方哲學史上第一個將唯心論哲學加以系體化的人，並在雅典創辦了學院(Academy)。柏拉圖的著作多以對話體寫成，包括《辯訴篇》、《曼諾篇》、《理想國》等。其中理想國是其中的代表作 "（*侯建，1*）。商鞅和柏拉圖二人在如何統治理想國度的思想方面有不少相似之處。作為偉大的哲學家、政治家，因為思想以及文化的差異，他們在理想國度的設定方面也有相當的差異。兩者理念的不同之處有二：其一是柏拉圖主張以哲學治國，商鞅主張以法治國；其二是柏拉圖在治國理想中，主張讓社會中一個少數人的階層統領國家，而商鞅力主通過法律幫助鞏固中央集權。他們兩者的共同點是，他們都相信基層市民的教育對管理產生決定性的作用。

柏拉圖在他的著作《理想國》中說，一個理想的完美社會，"既然是完美，所以也是睿智、英勇、有節制、富正義的"（*柏拉圖，194*）。他對這四個詞的釋義簡潔又明瞭："睿智在於接納忠言"，他認為如果一個人能夠接受逆耳忠言，是出于智慧而並非无知；英勇在於"知悉應該害怕和不應該害怕的事物的本質"（*柏拉圖，197*），他認為一個人的勇氣基於自幼的教育以及堅定不移的對恐懼的認知；"節制的意思，是某些快感和慾望的秩序化或控制"（*柏拉圖，199*）。他認為節制和"英勇"、"睿智"不同，應該被推廣到整個社會中，使全體民眾都擁有這種德行，才能夠讓社會整體邁向更完美的階段。正義之所以為正義，是"做自己的事，不要管閒事"（*柏拉圖，204*）， 而這直接影響到執政者的權力，他在正義的支使下保證"個人既不能掠奪他人、也不能遭人掠奪"（*柏拉圖，205*）。他認為

一個正義的人不會去干預別人的閒事，否則必會毀掉國家大事。

商鞅被秦孝公相中。"三試秦孝公"后，開始與秦國舊貴族進行變法的爭論，而爭論的內容被記錄在《商君書》中，其中詳細地錄有商鞅變法改革的細節。商鞅堅信法治對國家富強有正面的作用，嚴格的法治能夠幫助君主更好的管理國家。商鞅的變法一共有兩次，分別專注于改革經濟、農耕、政治、統治方式等。他發佈的第一份《墾草令》以及在《商君書》中匯集了他變法的具體內容，詳細地介紹了農耕社會應該如何運作，頒佈了許多新法令用來約束當時的國民。

柏拉圖和商鞅的治國方法從根本上看，表現為兩種不同的形式。柏拉圖在《理想國》中明確的指明，"人數最少的部份或階層，和城邦中這一領導、執政部份所具有的知識，整個根據自然如此形成的國度，便是睿智的"（*柏拉圖，196*）。也就是說，領導者可以改變國家，領導者本身的智慧是國家整體智慧的根基，而領導者在柏拉圖的理想國中是一組人數不多的，有智慧，通哲學的人。換句話說，在柏拉圖眼裡，國家的"衛國者"應擁有全面的哲學智慧，從而可以領導整個國家，讓國家也變得睿智。商鞅作為法家的代表人物之一，他在推行變法時強調了法律以及規矩的重要。在第一次變法的時候，他頒佈了《墾草令》，其中說道："聖人為法，必使之明白易知"（*李存山，27*）。意思是如果國家是法治的，如果聖人（君主）不知道法令，那是不可能實行的。為此，商鞅計劃將太子治罪，但因為太子只有一個，而秦孝公不允許，所以其師代受罰，以表法治的嚴厲。在《墾草令》中，商鞅也明確地指出："天下更民無不知法者"（*李存山，27*），來表示其變法的決心。從這兩種不同的治國方法中能夠看出，柏拉圖在治國方法中傾向"以德治國"，傾向與國民以及國君的品德修養大於法律制度，所以自制力是被看重的。而商鞅治國的方法偏重法治，所以認為嚴格的法律需要推行到整個國家，從而保持一個國家的統一和穩定。

從領導者的方面來看，柏拉圖的理想領導者與商鞅的理想领导者并不相同。在微小的細節上，柏拉圖提到他的理想國度應該由睿智的階層，也就是較少部分人加以統治。他明確指出"因擁有某種知識而得名的各階層的人里，衛士的人數[豈不是]最少"（柏拉圖，196）。這也證明了，柏拉圖對民主國家並不怎麼看好，反而說讓少數睿智的統治者管理社會才是最好的良方。

商鞅身為秦國時期的人，他主張的變法有助於鞏固中央集權，讓至高無上的九五之尊擁有最高的統領國家的權利。他認為一個君主"是以知仁義之不足以治天下也"，而"國之所以治者三：一曰法，二曰信，三曰權"（丁毅華）。"法"是需要君臣共守的，"信"也需要君臣共同建立，"權"則只屬君主一人。在商鞅心中，一個明主是"任法"、"重信"、"愛權"的。這一點與柏拉圖相似，二人都認為，一個能夠統治社會的當權者，他自身的修養必須要高。無論在品德上還是在哲學上，擁高尚的修養才能帶領國家攀上高峰。雖然柏拉圖的理想國中絕對的當權統治者仍占有一席之地，但這並不代表其理想與商鞅設計的中央集權是相同的。所以說，因為文化和歷史背景的迥異，他們理想的當權統治的形式也存有差異。

在二人的思想中，他們的理念存在相近的地方。柏拉圖在《理想國》中，曾經提到教育的重要性。他認為在理想的國度中，人們的智慧和他們擁有的知識決定了領導者統領這個國家的效果。在他的理想的國度中，人們應該 "rather more self-willed, and rather less well-read, though not without intelligent interests; ready to listen, but quite incapable of expressing himself"（寧願少讀書，也不要固執己見，但不能沒有聰慧的思想；善於傾聽，但不善於表達自己的思想）（柏拉圖）。而商鞅提出的"燔詩書而名（明）法令"（商鞅）的政策也表達了相似的意思。只有控制了人民的思想和他們的表達能力，社會才不會變得不安且動盪。燒燬一些對國家政治不利的書籍從而讓人民無法閱讀，以便控制他們思想的範圍，同時不讓賣藝的人士進入國家，明確國家"聲服無通于百縣，則民行作不顧，休居不聽"，避免混淆國民的視聽擾亂他們的心智。在《墾草令.開塞》中，商鞅在與舊貴族辯論中提到，"故知者作法，而愚者制惡。賢者更禮，而不肖者拘焉。拘禮之人，不足與言事"（所以有智慧的人能創製法度，而愚蠢的人只能受法度約束。賢能的人變革禮制，而沒有才能的人只能受禮制束縛。受舊禮制制約的人，不能夠同他商討國家大事。被舊法制限制的人，不能同他討論變法）（石磊，黃昕）可知在商鞅心裡，教育和思想對國君統治國家以及對貫徹法制來說是重要的。

商鞅在秦孝公時期推行的變法對秦國的經濟產生很大的影響。他的變法加強了秦國的中央集權並幫助秦國建立了一個穩定的社會，從而經濟快速增長，民眾生活素質上升。在秦孝公死後，商鞅馬上被舊貴族五馬分屍處決，因為其變法對他們一點好處也沒有。他變法的成功不是一朝一夕所取得的。變法經過了長期的準備和計劃，並且經過了他的深思熟慮，於是才有機會成功。雖然秦朝的滅亡是因秦始皇的暴政而導致，但是商鞅變法的初衷以及在當時的影響可謂功不可沒。他的理念和思想至今都可以被參考。柏拉圖是西方哲學史的奠基人之一，他的著作被多代人傳頌以及拜讀，許多西方現代哲學思想都是基於他的思想加以發揚光大的。商鞅和柏拉圖對理想國度的定義雖然不同，但兩者在理想的統治方式上還是有一些共同點的。這也解釋了為什麼兩者的思想在中國古代和西方古代歷史上俱有著奠基石一般的作用。

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How was the Education of Plato's Guardians and Auxiliaries Similar to the Spartan *Agoge*?

Mark Lu

Plato discusses the education of 'Guardians' and 'Auxiliaries' in Part Four of *The Republic*. His principles are based on the belief that a leader can be molded from youth through a carefully designed, disciplined education and that virtues can be taught through mythology. Plato's education system is a way of life and it envisages a structuring of society that in some ways mirror the Spartan *agoge* (αγωγη).

In *The Republic*, Guardians rule as the supreme authorities of the state. Auxiliaries consist of the military and police who execute the orders of the Guardians. Plato believed that the Guardians should only be selected from those who could demonstrate that they would put the interests of the community first, before themselves or their families. Candidates were tested throughout their youth on their selflessness and their abilities in the following areas: to withstand pain and suffering; to ignore "propaganda" (influences from others); and to maintain balance and harmony (Plato 158-9).

Ironically, Plato was not above using propaganda of his own to implement his system. He proposed a myth in which the voice of "God" persuaded the citizens that Guardians were made of gold, Auxiliaries of silver, and farmers of iron and bronze. Children, more or less worthy of their status, would be promoted or demoted within the gold, silver, and bronze classes. This "God" even threatened the ruin of the state if Guardians did not come from the gold class. Plato justified creating this myth by arguing that it would increase loyalty to the state (Plato 160-1).

Plato envisioned the Guardians living a frugal life. They would live in communal housing and eat at messes. Private property would be forbidden. Plato invoked God again to justify why Guardians would not be allowed to have any money – "because God had incorporated gold into Guardians' bodies, they had no need for worldly gold" (Plato 163). A Guardian should find happiness from the entire community and not from personal wealth or privileges (Plato 164).
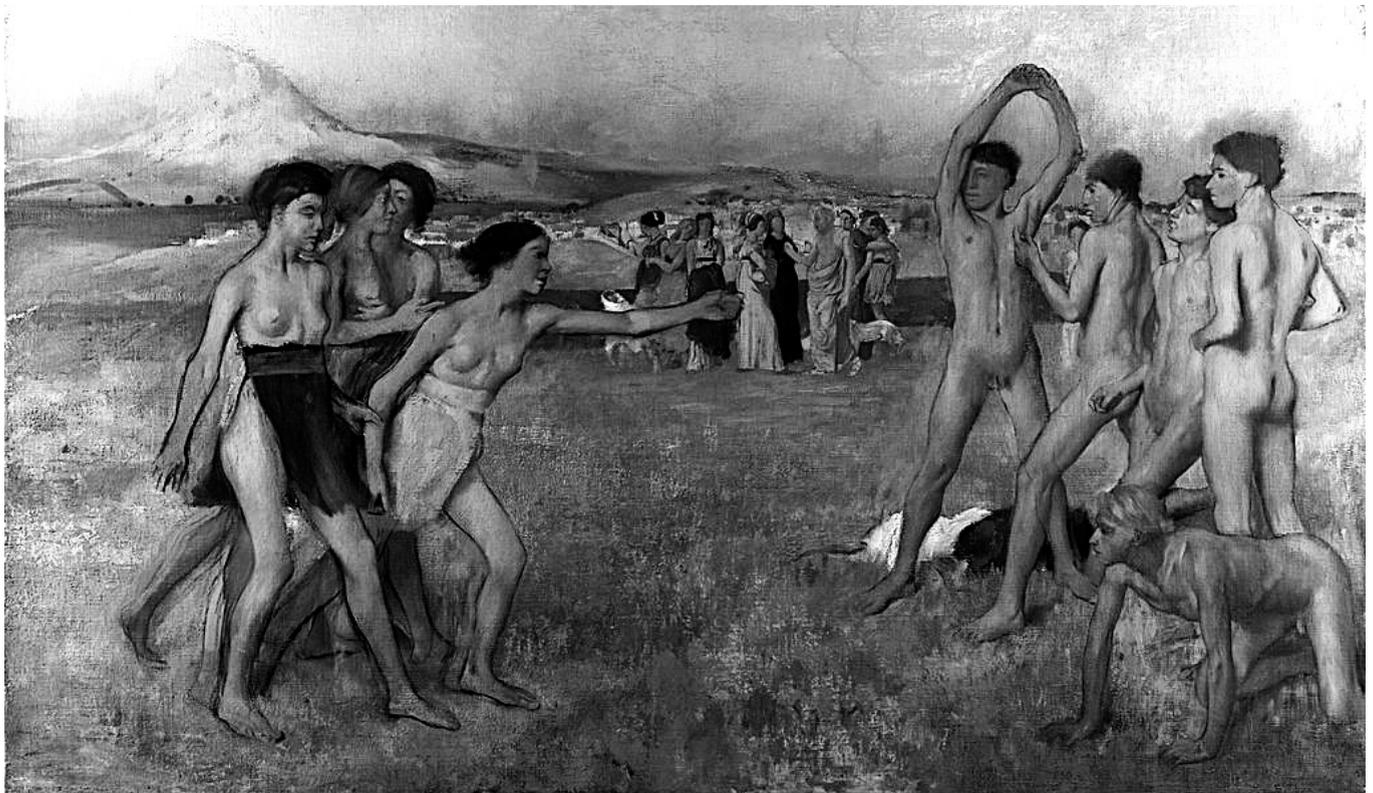

Fig. 1 – The military training of young Spartans has continued to inspire and resonate through the ages, such as in this painting by Edgar Degas, painted in c.1860 and hanging in the British National Gallery.

He needed to make sure that the gap between rich and poor would not be too great (Plato 166). It is not clear how Plato's education would have equipped the Guardians to do that, however. Throughout Part Four, Plato explores the philosophy and outcomes of his ideal education system, but not actually how it should be carried out. He dismisses using legislation to enforce desired values, and instead favors using myths and social pressure

It is not surprising that some of Plato's ideas mirror those of the Spartan αγωγη, the rigorous training and lifestyle required of all Spartan males. Plato served in the Peloponnesian War and knew how Spartan warriors were trained. In Sparta, boys were separated from their families at the age of seven and exposed to deprivation and discipline until the age of thirty. They were molded from birth to become warriors and those who were weak were eliminated from the community. Beatings and starvation were common and were meant to toughen up the youth for wartime. Similar to the Guardians and Auxiliaries, boys and men in Sparta ate communally in messes called *syssition* (Pomeroy 224). The men were expected to contribute a defined share of the provisions or be expelled from the *syssition* and would lose some rights of citizenship. As in *The Republic*, discipline and group mentality in Sparta were reinforced by social expectations and communal responsibilities. This was further augmented by intellectual and moral education though music. "Gymnastics for the body, music for the mind," wrote Plato when describing the αγωγη (Laurie 345). Music was used to stimulate enthusiasm for fighting the enemy, celebrating war heroes, and castigating cowards. The Spartan use of propaganda and mythology to achieve the state's goals echoes Plato's approach to education.

In *The Republic*, Plato proposes choosing rulers and leaders from men belonging to the gold or silver classes. In contrast, every Spartan had a chance to lead if he showed the desired qualities. "The governor," says Plutarch, "set over each of the bands, for their captains, the most temperate and boldest…" (Laurie 340). Spartan men were judged by their performance on the battlefield. Arguably, the Spartan education system, which was free and open to rich and poor alike, would have produced a more equal society than Plato's class-based system. Although Plato required his Guardians to minimize income inequality in their state, his class system would have made their job more difficult.

Plato's education system was intended to train Guardians to become rulers. He did not intend for farmers and craftsmen of the bronze class to be educated. Sparta, in contrast, exempted the future rulers – specifically the heirs of kings – from the αγωγη system (Knottnerus & Berry 35). Sparta was headed by two kings, one overseeing battles and the other religion. Why were they exempt from the lifelong training for battle? It is because, for the most part, the kings of Sparta were titular. The real rulers were a board of five *ephors* who were elected annually. In fact, the most able kings, such as Leonidas and Agis II, were not heirs apparent at birth, but had rather proven themselves worthy through the αγωγη (Jones, Lazenby, & Cartledge).

As the education system in *The Republic* is theoretical, however, it is difficult to judge whether it would have succeeded. Sparta did not remain dominant and its decline was marked by its defeat to the Thebans at the Battle of Leuctra in 371 BCE. Despite the universally rigorous training and community sacrifices required by the αγωγη, Sparta could not prevent its eventual decline. Aristotle wrote that a shortcoming of the αγωγη system was its single-minded focus on war and valor: "Valor is neither the only virtue nor the virtue principally to be kept in view in the superintendence of children." He criticized the emphasis on valor as producing savagery rather than civilization (Laurie 334). Aristotle believed that Sparta would only remain dominant so long as other nations did not catch up to the rigors of its military training. Once they did, Sparta's advantage would be lost (Laurie 334). Indeed, G.L. Cawkwell, in his paper "*The Decline of Sparta*", attributes Sparta's fatal defeat at the Battle of Leuctra not to dwindling population or mistakes of policy, but to the great military genius of Epaminondas, the Theban general (400).

Plato was not the only one who admired Spartan ideals and society. Most chillingly, Adolf Hitler tried to create a nation of "Nordic Spartans," with "ruthless devotion to the common good, sacrifice of private enjoyment, fierce physical training, eugenic policies, and public education aimed at producing mighty and patriotic warriors" (Cartledge 42-3). Time has shown that those who have tried to adopt the Platonic and Spartan educational systems – mainly fascist, socialist and authoritarian regimes – have failed to maintain happiness, balance, and harmony in their societies.

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Vice-Admiral Philo McGiffin's Account of the 1894 Battle of the Yalu River: An Analysis

Zoe Cheung

When it became likely that a major confrontation would soon arise between China and Japan in 1894, the Western powers that were contending in Asia at that time were unsure who would come out victorious. Both countries had just gone through major self-strengthening movements in an effort to join the modern world. The outcome of the battle was that the Chinese Beiyang (北洋) fleet suffered severe losses in the first battle of the Sino-Japanese War, called the Battle of the Yalu River (which the Chinese referred to as 大東溝海戰). Many analyses have since been made as to why China had lost the battle, taking into account all the background political and economical factors. Although background factors are important, sometimes the winning and losing of a battle turns largely upon what happens on a battlefield on the fateful day. This essay attempts to show the military and tactical side of the battle, based on the first-hand account of Vice-admiral Philo Norton McGiffin, the second-in-command of the Chinese battleship, Zhenyuen (鎮遠), engaged in the Battle of the Yalu River. To fully appreciate the details of such an account, the history of the Chinese navy, and how it came to be in the state that it was during the Battle of the Yalu River, first need to be explored.

Chinese shipbuilding was highly advanced in the early 15th century. Zheng He (鄭和) made his seven famous journeys to South East Asia, India, and the east coast of Africa. After the seven journeys, state patronage for seafaring and shipbuilding was stopped abruptly. Most sea expeditions were banned in order to regulate external trade after the mid-fifteenth century as China believed itself to be self-sustainable and therefore fenced itself off from other countries (戚其章 26). As sea voyages were no longer attempted, the associated technologies declined. China soon began to lag behind while western countries started exploring the world by sea and thus improved their navies fairly quickly between the 16th and 18th centuries. In the 19th century, China found that it was forced to open trade with Western powers when the navies of those powers arrived on China's doorstep. Seeing the disadvantage that China was placed at without a strong navy to protect itself, China started to rebuild its navy in the middle of the 19th century.

In the 1860's, a self-strengthening movement began in China to modernize its army, navy, and scientific technologies. Chinese ships were modeled after Western ships and many battle ships were bought directly from Britain and Germany. Western military advisors and instructors were also brought in to train Chinese troops and shipyards were managed by Westerners to avoid corruption by Chinese officials (鳴姜 102). As a result, China built a formidable navy, including ships that were some of the fastest and strongest in the world at that time.

The Beiyang (北洋) fleet was the biggest and strongest of the four Qing fleets that were built in the 1860s, the three others being the Nanyang (南洋), Guangdong (廣東) and Fujian (福建) fleets. The Beiyang fleet was the only fleet used in the Battle of the Yalu River and included 2 ironclad battleships, 2 protected cruisers, 2 armored cruisers, 1 corvette, 3 cruisers and 2 gunboats (戚俊杰 138).

The initial causes of the battle centered on contesting claims over the Korean peninsula. Although this had happened several times before during the Ming and Qing dynasties. When a rebellion started in Korea in April 1894, the Korean authorities sought the help of Chinese troops to quell the uprising. However, Japan also moved troops into Korea. Conflict over Korea led to Japan issuing an ultimatum, stating that the Chinese had to move their troops away before 22 July 1894 or decisive steps would be taken. This eventually led to the Battle of the Yalu River between China and Japan, which was documented by McGiffin.

Philo Norton McGiffin was born in America on December 13, 1860. He came from a family of soldiers and his own father had fought in the Mexican War and the American Civil War. McGiffin himself was trained in the American Naval Academy and arrived in China in April 1885 to seek his fortune. He got a chance to meet with Li Hongzhang, then Viceroy of Zhili. Li asked him to sit for an examination to test his military knowledge. He passed the test with flying colors and was offered a post to command a training ship. In the following ten years, he served as naval constructor and professor of gunnery and seamanship. Then he was appointed as second-in-command of the Zhenyuen, which took part in the Battle of the Yalu River. McGiffin himself was seriously wounded during the battle and his eyesight was wrecked permanently. After the war, he retired back to America and, while suffering from his battle wounds, he dictated a complete account of the Battle of the Yalu River to the *Century Magazine* from May to October, 1895. McGiffin eventually committed suicide to relieve himself from the pain of his wounds.

The battle started with the Japanese ships in two squadrons. These were the flying squadron, consisting of the Yoshino (flagship), Takachiho, Naniwa, and Akitsushima, followed by the principal squadron, consisting of the Matsushima (the flagship of Admiral Ito), Itsukushima, Hasidate, Chiyoda, Fuso, and Hiyei. The unengaged ships were the Akagi and Saikio.

The Chinese fleet had 10 ships. The left wing was made up of the Ting Yuen (flagship), Chih Yuen, Tsi Yuen, and the Kwan Chia. The right wing included the Chen Yuen, Lai Yuen, King Yuen, Chao Yung, and the Yang Wei. The Chao Yung and Yang Wei were initially out of station on the extreme right and the Ping Yuen and Kwang Ping, together with the two torpedo boats did not join the battle until later (McGiffin 2).

Fig. 1 – McGiffin's maps, published in the *Century Magazine*

According to McGiffin, battle progressed as follows: 1) the Tsi Yuen and Kwan Chia approached the Japanese, but bolted soon after the Japanese opened fire; 2) the Chao Yung and Yang Wei, two older cruisers, were then set on fire; 3) the Hiyei, also an older ship, was destroyed by the Chinese; 4) the Chinese formation was broken into an irregular group. The Japanese flying squadron approached on the one side and the principal squadron on the other, trapping the Chinese ships in between; 5) the principal squadron focused its attack on the two Chinese ironclads, causing severe damage; 6) the Chih Yuen headed towards the flying squadron, but was sunk; 7) the King Yuen was also sunk by the flying squadron; 8) the Chinese fleet ran out of shells and ammunition and the Japanese withdrew at 5:50 PM. The two fleets had a comparable number of ships and weaponry, but by the time the battle was over, eight Chinese ships had been

sunk while the Japanese only suffered four damaged ships. With comparable military power, it can be argued that the Japanese won because their military tactics in this battle were far superior to that of the Chinese. By facing the Chinese ships broadside, the Japanese fleet could fire at the Chinese with most of their guns while the Chinese could only use their guns at the bows of their ships. This tactic is called 'crossing the T' and helped the Japanese gain a huge advantage at the beginning of the battle, which caused two Chinese ships (Tsi Yuen and Kwan Chia) to leave the battle almost immediately and destroyed two other Chinese ships as well.

The second tactical decision the Japanese made was to encircle two of the strongest Chinese ships with one of their squadrons before using the other squadron against the weaker ships. The principal squadron encircled the Zhen Yuen and the Ding Yuen (See figure 1-4), cutting them off and rendering them unable to help the others ships, thereby breaking the Chinese fleet into an irregular formation. Another fatal disadvantage faced by the Beiyang fleet was the lack of ammunition. Corruption was so rampant during this time that much of the naval fund was used for other purposes. One infamous contributor to this defrauding was the Empress Cixi (慈禧太后), who used funds allocated to the navy to build her summer palace in Beijing. The situation during the battle was so dire that Commander McGiffin reported that, if the battle had gone on for another half hour, the Chinese fleet would have entirely run out of shells. Even the shells they had were of poor quality and could not do much damage(姜鳴 66).

A third aspect that precipitated the Chinese defeat was the lack of coordination in the Qing navy. Two other fleets, the Fujian and Nanyang, were in the area, but the Fujian fleet had been severely weakened and the Nanyang did not participate because of personal animosity between the commanding officers. On the other hand, the Japanese did not suffer from internal struggles like the Chinese did. Many have argued that, if the Beiyang fleet had received support from the other fleets, the result of the battle may have been different.

From these various points we can see that, although the Chinese navy did indeed have strong enough ships and weaponry, they lacked skill in tactics, lacked co-ordination, and suffered a great deal from the rampant corruption that plagued the country. These reasons caused the eventual defeat of the Chinese navy.
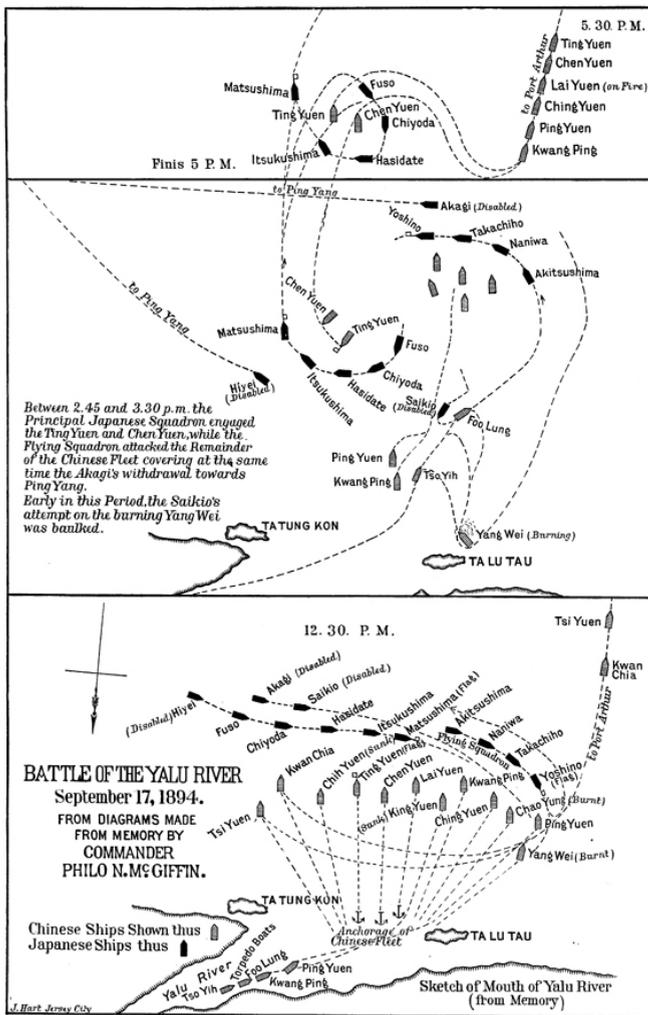
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古代中國、古印度、古巴比倫及歐洲對"負數"的定義、運算和應用

王子婕

負數與"零"可謂是息息相關。在歷史上最先提出"零"這個概念的是瑪雅人，之後由印度人發明了數字 0，並由阿拉伯人發揚光大，也正因此我們稱之為阿拉伯數字。據史料記載，瑪雅人有一個被科學家稱之為"人類頭腦最光輝的產物"的數學體系，并開創了許多新的概念，例如零。在瑪雅人的書面字中，"零"一般是用貝殼形狀的象形文字來表示。印度歷史上"0"這個數字是到了笈多王朝（公元 320—550 年）時才出現。[1]而中國從開始使用籌算起就有"0"，人們以空位表示"0"。但當時零只作為位置和運算結果，并沒有特定符號，這和阿拉伯數字專有一個符號數字"0"不同。[2]中國古代使用算籌進行計算，在算盤上，則以空位表示 0。（我國古代的正負數）

負數進入數學領域之中，比起整數、分數、甚至無理數為時都晚。中國、希臘、印度和阿拉伯的數學則都在早期與負數概念有所接觸但少有深入研究。其實負數在古代便已經出現在日常生活中，比如，賬房先生記帳時有餘有虧。在計算存儲糧食時, 有時要記進, 有時要記出。為了方便，人們就發展為用相反意義的數來記錄。把"賣（收入錢）"作為正數，則"買（付出錢）"作為負數，把"餘錢"作為正數，則"不足錢"作為負數。在中國算書中，最早出現"負數"這個概念的是《九章算術》，這也是世界數學史上第一次記載了負數概念和正負數的加減法運算法則。《九章算術》是中國流傳至今最老的一部數學專著之一，經過了長期的增補、修訂，直到東漢時期才形成了現在所流傳的版本。《九章算術》第八章提出，"方程"的作用便是"用以解決交錯、混雜正、負數的問題。（'以御錯糅正負'）"（《九章算術今譯》）其中第四小題也是使用"正負數"進行計算并解釋了正負數之法則："今有兩數若其意義得、失相反，則應分別名之為正數、負數。（'今兩算得失相反，要令正負以名'）"人們用紅色代表正數，黑色代表負數；在這個關於方程的章節中也提到了方程中可能有正數也可能有負數，"左、右行之數相互求的法則，即正負數加減法則。"在古代計算中加或減不拘於同行異行、同位異位，只有正與負兩種情形。在方程中通過左右行之數進行消元來加減（正負數）。

（如下圖，"行"是指這些矩陣中橫列的數字例如-5，3，2，"位"是指每個數字）

$$\begin{bmatrix} -5 & 3 & 2 \\ 6 & -9 & 5 \\ 8 & 3 & -13 \\ -600 & 0 & 1000 \end{bmatrix} \qquad \begin{cases} 2x+5y-13z=1000 \\ 3x-9y+3z=0 \\ -5x+6y+8z=-600 \end{cases}$$

除此之外，《九章算術》的"方程章"中還提到了許多正負數加減法的法則。"同號二數相減"是指以正數減正數，以負數減負數。減，是為了消去頭位的數據，也就是我們如今所說的符號，然而這一法則只適合用於符號相同的情況。"異號二數相加"則是以一行減另一行，而這只建立在兩邊為同類數的基礎之上，若兩邊為一正一負則非同類。不是同類數便無從得以相減；因此若負數為被減數而減數為正數，則餘為負數。同理，若正數為被減數而減數為負數，則餘為正數。正數或負數與某一數相加即為相益，也可以看作以另外一個數來代替原本被消去的數。此時的人們習慣將消、奪與加、減看做一個整體。總之，這則法則在於消去行的頭位數，旨在使其他數不再拘於大小或正負之分。書中記載"正數若無入則差為負數，負數若無入則差為正數"為"當被減行下實減去減行下實即列實時，而行中有正數、有負數，相減時也用此條法則。此條法則就是同號二數相減，異號二數相加，正數若無入則其差為負數，負數若無入則其差為正數"，其實便是零減正得負，零減負得正。其中的"無入"指的是不夠減或無從得減，因此消去某一數并讓另外一數取而代之。"異號二數相減，同號二數相加，正數若無入則其和為正數，負數若無入則其和為負數"，此時的人們已經發現負數前面符號的重要性以及它狡猾的地方，負數前若是加號便代表是相減，若是減號的話不僅會將負數"變"為正數，還會改為相加。這條法則可以與上一條互相轉化，此兩條可看作是一條法則，只因在方程算式中若全部換成異類數並不妨礙計算，因此這一條加法法則可以兼通。而古人在距今有兩千多年的漢朝便已得到了"兩新行之頭位數異號，則可用加法法則以消元；兩新行之頭位數同號，則可用減法法則以消元"這一與現在基本無異的數學法則，思維的精妙可見一斑。

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[1] 康, 明昌. "數的概念 (第 3 頁)." 《数学知识》.

[2] 《我国古代的正负数》 人民教育出版社.

因此，據《九章算術》所記載，漢朝時期的正負數加減法則為：

同名相除：若 a > b ≥ 0，則(±a) − (±b) = ±(a − b)
異名相益：若 a > b ≥ 0，則(±a) − (∓b) = ±(a + b)
正無入負之：若 b > a ≥ 0，則 a − b = −(b − a)
負無入正之：若 b > a ≥ 0，則 − a − (−b) = +(b − a)
異名相除：若 a > b ≥ 0，則(±a) + (∓b) = ±(a − b)
同名相益：若 a > 0，b ≥ 0，則(±a) + (±b) = ±(a + b)
正無入正之：若 b > a ≥ 0，則(− a) + b = +(b − a)
負無入負之：若 b > a ≥ 0，則 a + (− b) = −(b − a)

不過之後到了隋朝，正負數的表示方法有所改變。根據《隋書.律曆志》中提到的：「其算用竹，廣二分，長三寸。正策三廉，積二百一十六枚成六觚，乾之策也。負策四廉，積一百四十四枚成方，坤之策也。觚、方皆徑十二，天、地之數也。」這表明隋朝時人們習慣以三角形算籌來表示正數，正方形算籌來表示負數，除此之外，隋朝人在存放算籌時把 216 枚三角形算籌捆成一個正六邊形，再將 144 枚正方形算籌捆成一個大正方形。（隋書）

下圖是隋朝以及之前的算籌和使用方式）
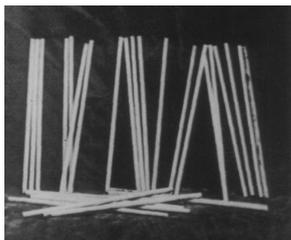
到了宋朝，表示負數的方法又有所改變，在該數的最末一位加一個斜放的算籌來表示負數，例如 3456 原本是三∣∣∣五 T，但當這個數變成負數，也就是 − 3456 的時候則是三∣∣∣五 T ，這樣一來就不必用顏色來區分了。

在加減法方面，《九章算術》已有很清楚的說明并與之後的加減定義大致相同。而負數的乘除法則是在元朝時朱世傑所著的《明正負術》中才有詳細的說明。「負負得正」這一法則，是公元 11 世紀我國宋朝的《議古根源》一書中闡明的。（數學史）

意大利數學家斐波那契（Leonardo Pisano Fibonacci，1170-1250）是歐洲較早深入探討負數的人之一。他在解決一個盈利問題時說：「我將證明這個問題不可能有解，除非承認這個人可以負債。」（負數的由來）與中國古代數學家不同，歐洲數學家更多地思考了負數存在的合理性。他們把零看作是「沒有」，所以質疑比「沒有」還要少的數的意義所在。在 16、17 世紀，歐洲人雖然越來越多地使用了負數，但不承認負數存在之合理性的數學家仍不乏其人。例如在代數方面做出了傑出貢獻的法國大數學家韋達（François Viète，1540− 1603），在解方程求得負根時為了避免引進「負數」這一觀念而統統捨去。直到 1637 年，法國大數學家笛卡兒 René Descartes（1596− 1650）部份地接受了負數，他把方程的負根叫做假根，並且建立了解析幾何學，創立了直角坐標系和點的坐標概念，這時負數才在幾何以及實際中取得意義，并確立了它在數學中的地位，這才逐漸為人們所公認。十八世紀德國偉大數學家（Kronecker，1823 − 1891）因此說：「只有整數是上帝創造的，其他的都是人類自己製造的。」直到十九世紀，歐洲人對於負數和零的合理性的辯論才逐漸塵埃落定。

從上我們可以看出，古代中國人很早就發現並認可了負數的存在，主要功能是將負數作為交易之間的表達方式或者是完成方程的解法之一。這在數學的分類上一種是正負性的分類，對數學發展起到了一定作用。相反，西方數學家從幾何學角度出發，長期困擾於負數的意義和它的合理性。兩者在看待負數問題時的角度與方式各不相同，這也決定了他們對於負數的用法、概念、以及接受負數的時間。儘管在開始時雙方有這樣那樣的不同，可最終在數學領域中的應用卻是同樣的精彩。

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Rhetorical Devices in Cicero's *Pro Archia*

Matthew Lu

Cicero's speech on behalf of the poet Archias in 62 BCE has been called "one of the most magnificent tributes to literature that has ever been heard in a court of law." (Nall xxi). That it was given not on a literary occasion, but in a court in advocacy of a poet's right to citizenship, speaks to how successfully Cicero used rhetorical devices to embellish a legal argument for which there was little concrete evidence.

Cicero launches the *exordium*, or introduction, to his speech with clear ethos by establishing his credentials and those of his client Archias. He uses hypostasis to humanize his speech: "If this voice of mine, trained by his precepts and his exhortation, has on some few occasions proved of service" (i.1). Cicero also prepares the jury for the unusual style of his speech, using anadiplosis to seek their acceptance: "But I crave your indulgence, an indulgence which will, I trust, cause you no inconvenience" (ii.3). Cicero then outlines the rest of his argument, while at the same time establishing a rapport with the jury by flattering them, calling them "a cultivated audience, an enlightened jury" (ii.3).

In the next section, the *narratio* (statement of the case), Cicero weaves an impressive story of Archias' past by associating him with his birth city of Antioch. This is meant to elevate his client's reputation in the minds of the jury. There is hyperbole in Cicero's description of Archias' fame: "his arrival created such a stir that the hope of seeing him went beyond the rumour of genius, and the hope was continually surpassed by the wonder of his actual presence" (iii.3). By magnifying Archias' fame, Cicero lures the jury into believing that they too must recognize Archias's genius. Using hypostasis again to personify "fame" gives further credence to Cicero's argument: "The voice of fame had made him well known to men whom he had never met" (iii.3). He characterizes Archias as being welcomed in both his youth and old age by the Luculli. Cicero punctuates his speech with asyndeton to highlight the long list of Archias's association with famous and powerful men: "…Metellus, the hero of Numidia, and of his son Pius; he read his works to Marcus Aemilius; the doors of Quintus Catulus and his son; Lucius Crassus cultivated his acquaintance; he was bound to the Luculli, Drusus, the Octavii, Cato…" (iv.8). Cicero ends this association with illustrious men with a euphemism meant to demean those less cultured: "he was courted by those who perhaps feigned a desire for such enjoyment" (iii.6). The effect of this rhetorical technique is to give a humorous diversion to the jury, while at the same time flattering them into believing that they are equal with the nobles.

Cicero uses *argumentum ad rem* to refute the prosecutor's claims in the next part of his speech, the *refutatio* (rebuttal). His tone is more factual, but he builds a climax to his statement by using anaphora and asyndeton: "to ignore…to demand…to shut…to insist" (iv.8). He also uses rhetorical questions to ridicule his opponent: "Or do you deny that my client resided in Rome? Or did he fail to report himself?" (iv.9). Cicero demonstrates logos in this part of his speech by focusing on the facts of his argument, relating without emotion Archias' whereabouts during the census, and naming those who witnessed his enrolment as a citizen. He concludes this factual narration using *chiasmus* to pressure the prosecution: "Upon you lies the burden of proof, if proof you can offer;" (iv.11). By emphasizing the word "proof," Cicero underscores the lack of it.

The next section, the *confirmatio*, is full of pathos as Cicero changes his tone and appeals to the jury – not about the facts of the case, but about the importance of literature. He persuades the jury that literature is the passion of all famous people, rightfully indulged in order to further mankind's appreciation of culture and history. He asks many rhetorical questions to this end, and also uses other rhetorical devices, such as anadiplosis: "All literature…abounds with incentives to noble action, incentives which would be buried…" (iv.14). Cicero cleverly interjects, using *chiasmus* to catch the attention of his audience: "I would even go so far as to say that natural gifts without education have more often attained glory and virtue than education without natural gifts" (vii.15).

Throughout *Pro Archia*, Cicero uses *memoria* and association to give stature and credibility to Archias, and to convince the jury that his client is worthy of citizenship. These appear frequently in the final parts of his argument, as when he associates Archias with Homer by detailing Homer's popularity in various cities that competed to claim his citizenship: "These peoples, then, are ambitious to claim, even after his death, one who was an alien, merely because he was a poet; and shall a living poet be repudiated by us…?" (ix.19). Cicero furthermore cites Themistocles as one who would have loved to have had his achievements sung by a poet (ix.19). Although Cicero is careful not to name Archias, the subtext he achieves in this instance conveys the clear message that Archias is just such a poet.

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Considering the Paradox of Sight in Sophocles' *Oedipus the King*

Katherine Chan

Sophocles' *Oedipus the King* tells the story of a king who is destined to murder his father and marry his mother. A fundamental aspect of the play, however, tells of how Oedipus contributes to his own downfall, thus making the story largely ironic and even more tragic. Tiresias, a blind prophet who is able to see the truth, forms a polar opposite to Oedipus' actions. In this paper, I aim to show how Tiresias could be considered farsighted because of his ability to know the truth and his insight of possible consequences if others knew it as well, while Oedipus could be considered blind because his passion and dedication to the needs of his city distract him and keep him from seeing the dangers of the truth. His dedication is influenced by two factors: his impulsiveness and his own need to be morally just for the good of his people.

Tiresias can be considered far-sighted because, throughout the play, many characters mention how he is an acclaimed prophet and a man who can see the truth. One example is when the chorus leader says: "They bring [Tiresias] on at last, the seer, the man of god. The truth lives inside him, him alone" (Fagles 175). Another example is when Tiresias accurately predicts that Oedipus will soon become blind, as he says: "Blind [Oedipus] who now has eyes" (Fagles 185). This accurately prediction shows how far-sighted Tiresias is.

Tiresias can also be considered far-sighted because of his practical insight of possible consequences that could result from him spreading his knowledge. One example is when Oedipus interrogates Tiresias and tries hard to obtain answers from him, Tiresias only says: "You bear your burdens, I'll bear mine. It's better that way, please believe me" (Fagles 177). Another example is when Oedipus taunts Tiresias, and says: "What will come? You're bound to *tell* me that" (Fagles 178), but Tiresias replies: "I will say no more. Do as you like, build your anger to whatever pitch you please" (Fagles 178). These examples show that although Tiresias has the information Oedipus seeks, he does not give him the information because he knows it will have dire consequences which are best avoided.

On the other hand, Oedipus can be considered 'blind' because his natural impulsiveness to protect his city leads to rash thoughts and actions, which make him reject views and opinions that could save him. Fagles explores this aspect, stating that Oedipus "is the driving force which, against the reluctance of Tiresias, the dissuasion of Jocasta, and the final supplication of the shepherd, pushes on triumphantly and disastrously to the discovery of truth" (150).

A specific example from the play is when Oedipus dismisses Creon's political advice. Creon knows it is best for the prophecy to be kept private, and says: "If you want my report in the presence of these people…" (Fagles 163), but Oedipus does not listen to him and instead replies: "Speak out, speak to us all. I grieve for these, my people" (Fagles 163). This shows how he is quick to decide and act, and how he quickly rejects the suggestion from Creon because he feels he has already made the correct decision, which makes him blind to anyone else's opinion.

Another reason why Oedipus can be considered blind is because he feels he has a responsibility to be morally just towards his people, which in turn causes him to see situations only from the point of view of what is best for the public, and not for himself. Even when it becomes clear that he is the murderer (after interrogating Tiresias, Jocasta, and Creon), Oedipus continues to interrogate the shepherd, because he wants to be completely sure who the murderer is, since the murderer must leave the city for the plague to be lifted. This aspect increases the irony in an earlier speech against the murderer, when Oedipus first hears the oracle's prophecy, where he says: "Banish this man – whoever he may be – never shelter him, never speak a word to him, never make him partner to your prayers" (Fagles 172). Oedipus says this in the hope that the crime will be solved more quickly. However, what he does not do is a basic investigation before announcing this harsh threat towards the murderer, as this comes back to haunt him later on in the play. These examples show that Oedipus' actions are for the benefit of his own people, but it is this same responsibility he feels towards them that keeps him blind as he only focuses on what is best for his city.

Oedipus being considered 'blind' while blind Tiresias is considered 'far-sighted' is a paradox. Tiresias is able to know the truth and has practical insight into possible consequences if the truth were to be spread, while Oedipus is impulsive and has a natural instinct to protect the city, which prevents him from 'seeing' the truth – that he is the murderer he has been searching for all along.

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