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*Myth and the creative process:
A view of creativity
in the light of
three Indian myths*

C. R. ANANTH RAO

NATIONAL INSTITUTE OF ADVANCED STUDIES

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Introduction

Mythological stories from different traditions typically deal with the larger-than-life exploits of heroes and seekers, their struggles against odds, and eventual fulfilment. Yet myths endure because they express the inner urges, ambitions and visions not only of the ordinary people immediately connected with particular mythic traditions but also, in a deeper sense, of humankind as a whole. My concern in this study is to explore the possible experiences traversed by the more conspicuously creative of human beings as they produce their work; that is, what is often described as 'the creative process'. As with mythological stories, we assume that the study of conspicuously creative humans – the 'big people' or the 'heroes' – is merely a 'zoomed-out' view of how the vast majority of people form a microcosm of creativity in their everyday lives. Our unsung and unheralded cumulative victories contribute as

much as, if not more than, their magnified counterparts in the collective victories achieved by humankind.

If mythological stories are about the quests, struggles and fulfilment of heroes and seekers, then they may provide valuable insight into the creative process that accompanies the work of creative individuals. I will consider three stories from Indian mythology – one each from the *Rāmāyaṇa* and the *Mahābhārata* and a third from the *Bhāgavatam* – and examine how they relate to the creative efforts of three such individuals: the Polish-French Nobel Laureate Marie Curie, Indian mathematical genius Srinivasa Ramanujan, and another Nobel Laureate, Australian novelist Patrick White.

The purpose of the present article is to outline how an examination of mythological stories from the point of view of Creativity is a useful and rewarding exercise because it provides a unique perspective on the creative process. Along the way I will also make some general comments on issues related to cultural and cross-cultural studies, and some more particular comments on issues concerning creativity.

Part One gives a brief outline of the three stories from a perspective guided by the analysis of creativity mentioned above. In Part Two I consider brief biographical sketches of the subjects Curie, Ramanujan and White, again with a focus on the creative process that guided their work. Part Three brings together the previous two sections, exploring how the ideas of creativity embodied in the three myths may help in understanding the creativity of the three

individuals. In the concluding remarks I draw some specific inferences about the relationship between myth and life as it concerns creativity and as it relates to cross-cultural studies of myths in general.

Part One: Three Stories from the Indian Epics

The *Rāmāyaṇa* and *Mahābhārata* are the two great epics of Indian civilization, which, although now considered to occupy an important place in Hinduism, are regarded as essentially secular in their origins. They were originally written in Sanskrit, the *Rāmāyaṇa* consisting of 25 000 couplets and the *Mahābhārata* of over 100 000. The *Rāmāyaṇa* is the older of the two and enjoys the reputation of the 'Ādi kāvya', or first work of poetry; its composition is attributed to the sage Vālmīki, the 'Ādi kavi', or the first poet. The accuracy of this in historical terms is not so pertinent to our discussions here; the *Rāmāyaṇa* has played the role of a source book in the creative literary tradition of India not only in Sanskrit but also in the regional Indian languages. Along with the *Mahābhārata*, it has been the most significant source and inspiration for creative expression in other fields as well, such as music and dance, sculpture and painting. The *Bhāgavatam* literally means 'the book of devotees'. The frequent and overtly pious messages in its various stories have led to the book being treated primarily as a religious text. The stories, however, are richly allegorical and deal with a broad range of themes that illustrate the human condition.

The first story from the *Rāmāyaṇa* tells of how the sage Vālmīki came to write the great epic poem. In the *Mahābhārata* I focus on the hero Arjuna's quest to gain the powerful weapon *pāśupata* from the mighty god Śiva. Lastly, the *Bhāgavatam* story is that of the seeker-king Muchukunda's quest for self-realization.

1.1 Vālmīki's writing of the Rāmāyaṇa

The *Rāmāyaṇa* has seven *kāṇḍas* (books), and each *kāṇḍa* is divided into *sargas* (chapters). The first four *sargas* of the first book, the *Bālakāṇḍa*, illustrate how the story of Rāma is 'revealed' to Vālmīki, inspiring him to produce the first work of poetry.

One day the sage Vālmīki has a visitor. It is the great Nārada, the celestial bard, lute in hand. Bard, sage and jester all rolled into one, Nārada is easily the most versatile and endearing character created in Indian mythology, figuring in almost every story. He moves freely in the skies, goes everywhere and knows everything. Vālmīki offers him due hospitality and then asks him a question that has been preoccupying him for a long time: is there a human being perfect in every way? For, if this being does exist, Nārada is bound to know of him. Nārada is pleased to be asked the question and answers that it is rare to find such a person, but there was indeed one, and proceeds to tell Vālmīki the story, in about one hundred couplets, of the noble Prince Rāma born in the famous Ikṣvāku dynasty.

Nārada then departs heavenwards, but his affirmative answer has a profound effect on Vālmīki. After a reflective moment he goes with his disciple Bharadvāja to bathe in the nearby river named 'Tamasā', meaning placid. The sight of the pure, clear water in the river makes him exclaim: "Bharadvāja, look at the pleasing and enchanting waters of the river, so like the mind of a good man". As he wanders around in the tranquil surroundings, he sees a pair of sweet-voiced *kraunca* birds inseparable in love. A reckless hunter enters this idyllic scene and shoots the male bird whose bloodstained body falls to the ground. At this, the female lets out a pathetic cry of agony (*rurāva karuṇām giram*). Full of pity for the slain bird, the sage is overcome by the pain of the female and in a sudden rage at the hunter's thoughtless and improper act (*adharma*), utters the curse*:

*mā niṣāda pratiṣṭhām tvamagamāḥ śāśvatīḥ samāḥ
yat kraunca mithunādēkaṁ avdhīḥ kāmamōhitam*

Hunter! May you never find a home for eternal years, for you killed one of the pair of kraunca birds who were in the ecstasy of passionate union.

(Vālmīki Rāmāyaṇa, Bālakāṇḍa, Sarga 2, verse 15)

The spontaneous outburst of Vālmīki uttering the curse is one of the famous verses from the *Rāmāyaṇa*. The sage is somewhat taken aback at his loss of temper. But,

reflecting, he realizes that what he has uttered is poetry. He tells his disciple:

*pādabaddhō-akṣarasamaḥ tantrīlayasmanvitaḥ
ślōkārtasya pravṛttō mē ślōkō bhavatu nānyathā*

Bound in four metrical quarters, each with equal number of letters, and worthy of being sung with musical instruments, what came forth from me, afflicted by sorrow is a verse of poetry (*ślōka*) and not otherwise.

(Vālmīki Rāmāyaṇa, Bālakāṇḍa, Sarga 2, verse 18)

The delighted disciple instantly memorises it. The verse and its meaning still uppermost in his mind, Vālmīki completes his ablutions, returns to his *āśrama* (hermitage) and attends to his duties while still absorbed, almost in a state of trance or meditation (*dhyāna*), with his verse. He again has an interesting visitor; this time it is the Creator Brahma. Vālmīki performs his duties as a host, though all the while completely lost in his reliving of the preceding events, and, grieving for the female bird, repeats his verse. The kindly Creator is bemused at the sage's predicament and proceeds to set him at peace.

*ślōka ēva tvayā baddhō nātra kāryā vicāraṇā
macchamādādeva tē brahman pravṛttēyam sarasvatī*

What you composed is a verse of poetry (*ślōka*) indeed, of this have no doubt. By my will alone did the words (*sarasvatī*) flow out of you.

(Vālmīki Rāmāyaṇa, Bālakāṇḍa, Sarga 2, verse 31)

Brahma then exhorts Vālmīki to employ the delightful new verse form to write the story of Rāma as he heard it from Nārada:

*kuru rāmakathāṃ punyāṃ ślōkabaddhāṃ
manōramāṃ.*

(Vālmīki Rāmāyaṇa, Bālakāṇḍa, Sarga 2, verse 36)

He assures Vālmīki that as he writes the story of Rāma, of his queen Sīta and of the demons, what he does not know will become known to him (*yaccāpi aviditaṃ sarvaṃ viditaṃ tē bhaviṣyati*). Brahma then vanishes, leaving the sage and his disciples in a state of wonderment. The joyous disciples celebrate the occasion by chanting the verse again and again. And thus it was that 'grief flowed out as words of poetry' (*śōkaḥ ślōkatvamāgataḥ*). Vālmīki then resolves to compose the sacred story of Rāma as a work of poetry.

The story of Vālmīki's realization is a complete archetype of the creative process. In the first stage, the putative writer begins with a *quest* about the possibility of good; specifically, whether an ideal or perfect human can exist in the real world of opposites consisting of good and evil. Nārada's response in the form of Prince Rāma's story is an affirmation of the possibility of good. This is the second stage when the quest takes a specific *direction*. Nārada may be a real life mentor, or some external trigger, or a definite stage in the development of the initial idea in

the creative person's mind. The affirmative answer has a telling effect on Vālmīki who is struck by the peaceful, clear waters of the river, aptly called 'Tamasā' or 'the placid one'. It reminds him of the mind of a good man. The external world is a mirror of Vālmīki's internal state of mind. This tranquil feeling is augmented by the serenity of the ambience.

The hunter's thoughtless act throws Vālmīki into the harsh world of reality. The sage's response is one of anger; a disquieting reaction for him as it reflects the external world, the possibility of evil in the midst of tranquillity. This external clash is internalised in the sage's response in the form of intense pity and compassion for the wailing female bird. The result is a spontaneous creative outburst in the form of verse, a novel poetic form. This is the third stage in the creative process.

However, his internal world continues to be a complex interplay of the opposites, the ideal and the real, that is of innocence and experience. Something more is needed to resolve the resulting tension. Vālmīki is aware that he has created something new but he needs *confirmation*. This fourth stage is here provided by the Creator Brahma, who is also the lord (husband) of Sarasvati, the Goddess of Speech. Brahma's role in the fourth stage is overtly allegorical. It may be played by an external agent or it may be the familiar stage in the creative process in which the creator comes to terms with and gradually recognizes the true value of their creation.

The writing of the great work, the accomplishment of the desired result or the *final product*, may be regarded as stage five in the creative process. The disciples' rejoicing and Vālmīki's resolve to employ his new mode of poetry to write a great work is reminiscent of scenes in an academy of professors and their students.

There are parallels between this discussion and Helmholtz's four-stage model of the creative process: (i) Preparation, (ii) Incubation, (iii) Illumination or Inspiration and (iv) Verification or Elaboration. I will return in the final part of this article to a detailed comparative discussion of the various models.

1.2 Arjuna's quest for the pāśupata weapon

The *Mahābhārata* deals with the events leading up to the great war and the eventual war itself between the Pāṇḍavas and their cousins, the Kauravas. The five virtuous Pāṇḍava brothers and their queen Draupadi have been in exile in the forest for thirteen years, having been duped in a game of dice into forfeiting their kingdom, Indraprastha, to the hundred-strong Kaurava brothers. Though by the terms of the exile the Pāṇḍavas are entitled to regain Indraprastha after the thirteen years, the Kauravas, led by the proud and recalcitrant eldest Prince Duryōdhana, seem likely to refuse to return the kingdom, making war inevitable.

The Pāṇḍavas therefore use their period of exile to arm themselves. It is decided that Arjuna, the third Pāṇḍava and foremost warrior among them, should go and seek

weapons from his celestial father *Indra*, the king of the gods. The task requires performance of severe penances (*tapas*). Arjuna sets forth dressed as an ascetic but armed as a warrior with his famous bow, the *gāṁdīva*, and its two inexhaustible quivers of arrows. He travels north and reaches the sacred *Indrakīla* mountains where he is to perform a penance to appease the king of gods. *Indra*, however, has other plans for his earthly offspring. Appearing in disguise he challenges Arjuna and questions the incongruity of an armed ascetic in the peaceful place meant for ascetics. Arjuna asserts his right as a warrior to carry weapons. *Indra*, whose intent was to test the prince's strength of purpose, is pleased. He advises Arjuna to perform a penance to please *Śiva*, also known as '*paśupati*', or lord of the beasts, and to obtain from him the powerful weapon *pāśupata*. After this, he says, Arjuna will be welcome in *Indra*'s own city of *Amarāvati* where he will receive other weapons.

Arjuna now proceeds to the *Himālayas*, the abode of *Śiva*, and performs a penance of increasing austerities, finally subsisting on nothing and standing on just one toe and with upraised arms. A *kirāta* (hunter) chieftain appears on the scene, accompanied by his consort and attendants. At this point, the demon *Mūkāsura*, the 'dumb demon', appears between the *kirāta* and Arjuna in the form of a wild boar and is about to attack the ascetic Arjuna. The *kirāta* sees the boar first, but Arjuna, roused by the noise, instantly takes aim first with his bow and arrow. Both

archers then release their arrows and the demon falls dead with two arrows in its body.

An argument ensues between Arjuna and the *kirāta* as to who can legitimately claim the game: the one who sighted it first or the one who took aim first. A fierce battle ensues, in which Arjuna's arrows and other weapons seem totally ineffective. He is nonplussed at being humbled by an unknown *kirāta*; who could it be? For only the great god Śiva can stand up to his. – Arjuna's – weapons. Full of his own sense of invincibility as a warrior, he continues to fight. Arjuna loses all his weapons, including the *gāṁdīva*, as the wielder of which he is famous as *gāṁdīvi*. It is the pre-eminent symbol of his identity as a great warrior. The fight continues in unarmed combat and despite Arjuna's heroic efforts, the *kirāta* gains the upper hand. Arjuna is reduced to a lump of bleeding flesh and is lying on the ground, barely alive.

Slowly regaining awareness, he remembers his original goal, which is to reach the great god Śiva. He makes a crude mud idol and worships it with some flowers strewn on the ground, but finds that the flowers land on the *kirāta*'s head. There is instant recognition that the *kirāta* is none other than Śiva, from whom Arjuna is to obtain the gift of '*pāśupatāstra*' the terrible *pāśupata* missile. Śiva now presents himself in his true form to Arjuna, compliments him on his skills as a warrior and teaches him the secrets of the powerful *pāśupata* with due caution on using it with restraint for, wrongly used, it can destroy the

world. Arjuna is restored to his normal strength and his weapons are returned to him. The incident of the boar and the ensuing battle are merely a ruse by the great god to test Arjuna's mettle and his fitness to receive the powerful *pāśupata* missile.

This episode from the *Mahābhārata* is also the subject of the work *kirātārjunīyam* by the Sanskrit poet Bhāravi who lived in the 6th century A. D. There are some interesting differences in Bhāravi's treatment of the theme. He gives a charming grammatical simile and observes that the appearance of the 'dumb demon' (*mūkāsura*) is a means to bring about the fruitful confrontation between Arjuna and Śiva. To Bharavi, the 'dumb demon' is like the transient link syllable 'ik' that brings about the compounding of 'word' and 'suffix' and disappears in the process: 'prakṛti pratyayōr ivānubandhaḥ' (*kirātārjunīyam*, Sarga 13, verse 19). Śiva is word, Arjuna the human is suffix, and the fruitful confrontation between the two is the germ of creative effort. In Bhāravi, the aiming and shooting of the arrows of the two protagonists is similar, but only one of the arrows hits the mark, the other disappearing "in the bushes somewhere". The argument, which results in the battle, is not about whose legitimate quarry the boar is, but about whose arrow killed the boar. The climactic moment of recognition is also treated differently. During the unarmed combat, the *kirāta* springs up to the skies; Arjuna follows up in a valiant attempt to bring him down and 'accidentally' grabs the

kirāta's feet. This is the moment of surrender representing extinction of Arjuna's ego; it is also the moment of illumination and Śiva reveals himself to Arjuna.

Arjuna's initial *quest* is for weapons from Indra, king of the gods; he has to secure them through ascetic means. Indra points to the incongruity of an ascetic bearing arms; Arjuna has not yet gone through the mellowing experience necessary to subdue his identity or ego as a great warrior. Indra directs him towards a more ambitious goal, that of obtaining the *pāśupata* from Śiva. The dumb demon brings Arjuna and the object of his penance Śiva in a fruitful confrontation, but as long as his self-conscious ego as a warrior is alert, Arjuna is unable to make the recognition even though there are suggestive moments during the confrontation, for example he knows that only Śiva can stand up to him in battle. The battle is symbolic of the intense struggle in any creative effort; the gradual stripping of the aspirant's ego, to the point of defeat, which is also the point of revelation, the moment of insight and illumination.

The story is an allegory of three features that are often part of the creative effort: a dramatic change in the initial goal, the long period of struggle and perseverance, and the blissful moment of success coincidental with the subjugation of ego.

1.3 King Muchukunda's awakening

The story of King Muchukunda is one of the minor stories in the *Bhāgavatam*. Muchukunda is a noble, heroic king born in a lineage famed for such virtues. His quest is for the

highest goal, that of self-realization and deliverance from the cycles of birth and death. The gods (*suras*) are constantly being harassed by their more resourceful cousins, the demons (*asuras*), and are in need of protection. They seek Muchukunda's help as their guardian. He fulfils this role for a very long time, in the process leaving behind his kingdom and his family.

Eventually the gods have one of their own, *Guha*, born to fulfil the rôle of protecting them from the menace of the demons. Muchukunda's services are no longer needed and the gods in gratitude offer to grant him any of his wishes with the exception of the gift of final deliverance, which can only be bestowed by the Supreme One. But Muchukunda is all alone now; time has taken full toll of the transient world he left behind, the world of his kingdom, his queens, sons and his ministers. His predicament is typical of seekers who give their life to a single cause. For once, his thoughts turn to himself and all he is aware of is his own sense of fatigue. All he can ask of the gods is for 'sleep', one long uninterrupted spell of it. The gods grant his wish and indulge a bit more. Any one who wakes him up will be burnt to ashes the moment Muchukunda sets eyes on the person. He promptly finds a suitable place and goes to sleep. This seems fine but Muchukunda is a seeker and his true goal is ultimate deliverance. He cannot make progress towards it as long as he is in the dormant state. The gratuitous kindness of the gods means no one dare wake him up. How is he to return to his true quest?

Many an age later, we are in Mathura, capital of the Yādava kingdom. The brothers Kṛṣṇa and Balarāma are fine young princes belonging to the Yādava clan. Kṛṣṇa, of Bhagavad-Gīta fame, is the Supreme Lord Viṣṇu incarnated in human form to protect the weak and the virtuous and uphold *dharma* (righteousness). Kālayavana, a fierce, proud warrior of superhuman strength, is looking for worthy adversaries against whom to prove his prowess. The celestial bard Nārada (whom we have already met in the Vālmīki story) 'drops in' on Kālayavana and tells him that the Yādavas and Kṛṣṇa, the foremost among them, are the only foes worthy of Kālayavana's might. Kālayavana promptly sets forth with a huge army and surrounds Mathura, seeking battle with Kṛṣṇa and the Yādavas.

Meanwhile, Kṛṣṇa senses that the King of Magadha, a long-time enemy, who has unsuccessfully laid siege to Mathura before, will surely take advantage of this siege to avenge his earlier defeats at the hands of the Yādavas. Kṛṣṇa devises a plan to tackle the twin threats. He appears unarmed at the main gates of Mathura in full view of Kālayavana and his armies and walks swiftly away from the city. Kālayavana, who has not seen Kṛṣṇa before, recognizes him from Nārada's description of his physical characteristics and ornaments. He infers that Kṛṣṇa has chosen to fight unarmed; Kālayavana like a true warrior decides to do likewise and follows Kṛṣṇa on foot.

A chase ensues and Kṛṣṇa draws Kālayavana far away into the mountains and then suddenly enters a cave.

Kālayavana follows him in to the cave, and comes across a sleeping figure. Already confused and angry at being deprived of a proper battle, Kālayavana is further enraged. He thinks the sleeping figure is Kṛṣṇa pretending to be innocently asleep and kicks him mightily with his foot. At this, the sleeping figure slowly wakes up and, looking around, sets eyes on Kālayavana, instantly burning him to ashes.

The sleeping figure is, of course, Muchukunda. It is revealing that Kālayavana, who a moment ago has recognized Kṛṣṇa by using a checklist of features, makes a fatal mistake when his judgement is taken over by anger. Kṛṣṇa, now in his magnificent, transcendental form, appears before Muchukunda. Struck by a sense of wonder and mystery, and aware that he is in an extraordinary presence possibly of the Supreme One, Muchukunda in all humility still seeks to know. Kṛṣṇa as the Supreme Lord gives Muchukunda a glimpse of the Infinite and grants him eternal devotion and deliverance: it is the moment of illumination.

Kālayavana and Muchukunda represent the two facets of the human quest. One seeks mastery and control; the other is sensitive, and, driven by a sense of mystery and wonder, simply seeks to know. In Sanskrit, *kāla* means time; Kālayavana could represent the tyranny of Time, the binding that chronological time has upon us, forcing us to wait. When Time is ripe, however, the dormant, subtler, sensitive aspect is awoken, the aggressive, presumptive aspect is overtaken and the moment of revelation, the creative moment, occurs. In the Pāśupata story, Arjuna

personifies the two facets in himself. When he is battling with Śiva, Arjuna is aggressive, driven by his ego as a great warrior; when he is stripped of it, the seeker in him is awakened. We are looking at the same phase in the creative process through two different windows in the two stories. In the Pāśupata story the view is of activity, one of suffering and struggle; in the Muchukunda story the view is of the dormant state, one of inertness. Illumination occurs when the self-conscious ego is subdued.

Examples of both perspectives of this phase in creative work can be found in arts and sciences. The period of intense struggle before a writer, painter or a scientist achieves crucial insight is similar to Arjuna's battle. It is a common experience for the protagonist to realise after the insight has occurred that the solution was always around, only one could not see it until the moment occurs.

The Muchukunda scenario is not uncommon in everyday life but seems to be reported more often by mathematicians. Mathematician Jacques Hadamard speaks of

...the sudden and immediate appearance of a solution at the very moment of sudden awakening. On being very abruptly awakened by an external noise, a solution long searched for appeared to me at once without the slightest instant of reflection on my part.

(Hadamard 1945: 8)

The great mathematician Karl Gauss wrote about a theorem he had trouble proving:

Finally, two days ago, I succeeded, not on account of my painful efforts, but by the grace of God. Like a sudden flash of lightning, the riddle happened to be solved. I myself cannot say what was the conducting thread which connected what I previously knew with what made my success possible. (Hadamard 1945: 15)

Henri Poincare reports of an important insight he got while boarding an omnibus:

At the moment when I put my foot on the step the idea came to me, without anything in my former thoughts seeming to have paved the way for it, that the transformation I had used to define the Fuchsian functions were identical with those of non-Euclidean geometry I felt a certainty. On my return to Caen, for conscience's sake I verified the result at my leisure.

(Hadamard 1945: 13)

Kṛṣṇa's solution to the crisis of two threats to Mathura is itself an example of creativity. Kṛṣṇa seamlessly flows through divine and human roles. He is aware of Muchukunda who is asleep but really in need of redemption from his inert state (a state as much in need of redemption from as the fallen state). An apparently unrelated factor is harnessed towards meeting two goals; destruction of Kālayavana and bringing awakening and Grace to Muchukunda. It is the familiar inventive solution of 'killing two birds with one stone'.

Part Two: Creativity in Three Individuals, in the Context of the Three Stories

In this section I will briefly look at the examples of three outstanding individuals: Marie Curie, Srinivasa Ramanujan and Patrick White. While they come from disparate backgrounds, a common element is that all three came from outside the major hubs of activity in their respective fields. My study does not purport to be a case study of these individuals in the manner of Gardner's (1994) major study of seven individuals. The focus, rather, is on the style and process that governed their creativity, to see how far the archetypal stories considered before may be of relevance in understanding their creativity.

2.1 Madam Curie: a year in her life

Marie Skodowska Curie was born on 7 November 1867 in a family of educationists in Poland, an occupied land at the time. Remarkably gifted and brilliant as a scholar, she was driven by two passions in her life. One was a passion for science, in particular Physical Sciences and Mathematics. Handicapped by poverty and the fact that university education was not open to women in Poland at the time, she arrived in Paris in 1891 aged 24 years. Surviving on meagre funds and displaying an enormous capacity for hard work coupled with a brilliant mind, she obtained, by 1897, degrees in Physics and Mathematics with very high distinctions, and had also authored a monograph on magnetic properties of steel.

Curie's other passion was a dream of nationhood for Poland, to "work to build up a magnificent intellectual capital for Poland" (Curie, 1938: 53). The two passions may be regarded as the dominating quest in Marie Curie's life, somewhat akin to Arjuna's quest to become the world's greatest warrior and to regain the kingdom from the Kauravas.

Curie's life was an intensely busy one, full of accomplishments as a scientist winning two Nobel Prizes, building institutions, and being a parent, with Pierre Curie, to two daughters. The period of five years from December 1897 to 1903 appear to be of particular interest in terms of her life as a creative individual, and, even more so, the period of one year from December 1897 to December 1898.

The Curies' first child, Irene, was born in September 1897 (Quinn 1995: 133). I am indebted to Quinn's biography of Marie Curie for the chronological facts in the following. By December 1897, Marie was back at work, looking for a suitable topic for a doctoral thesis. Roentgen's serendipitous discovery of X-rays in 1895 was the exciting news in Physics at the time and was reported to the French Academy by Henri Poincare on January 20, 1896. Physicist Henri Becquerel, a member of the Academy, thought X-rays might be connected with the phenomenon of phosphorescence. Phosphorescence is the phenomenon displayed by some materials which, after exposure to energy such as sunlight, would absorb the energy and later release it as a glow. Becquerel accidentally discovered that

uranium salts, which are phosphorescent, affected photographic plates even without prior exposure to sunlight. His report on uranium rays was presented to the French Academy in February 1896. After this his efforts produced no significant breakthroughs in explaining the effect, since he was too preoccupied with the phenomenon of phosphorescence and with the idea of finding a source of X-rays. He lost interest in the area as a "dead horse". But in December 1897, Marie Curie chose to study Becquerel rays because 'the study of this phenomenon seemed to us very attractive and all the more so because the question was entirely new and nothing yet had been written upon it. I decided to undertake an investigation' (Curie 1923: 45).

This was a crucial and bold step taken by a doctoral student. The typical approach would have been to settle for a well-established topic in which one could be more certain of results. This step is the specific *quest* within an area of science as a part of her broader 'quest' referred to before. Curie realized that she needed to make precise quantitative measurements in order to make progress. Instead of being distracted by the phenomenon of phosphorescence, she chose to study the ionization process, the capacity of uranium rays to charge the surrounding air.

Two favourable circumstances were influential in her taking this fresh look. She had at her disposal "an excellent method developed and applied by Pierre and [his brother] Jacques Curie" for very accurate measurement of ionisation (Curie 1923: 45). The other was a paper "on the

electrification of air by Uranium and its compounds” written in December 1897 by Lord Kelvin, a well-wisher and admirer of Pierre Curie. These two factors provided specific *direction* away from phosphorescence to ionization in her investigations. Her precise measurements revealed to Curie that the radiation of uranium compounds was an atomic property and not caused by light or temperature, thus ruling out phosphorescence as the cause of the phenomenon. In another prescient initiative around 10 February 1898, Curie tested ionising currents of thirteen elements including gold and silver to determine if they were ‘active’ in the same way as uranium. She found that all the thirteen elements were inactive.

The next move must be regarded as a major creative leap, an *inspirational* move: she extended her investigations to mineral ores. She was gradually shifting her investigation from the phenomenon of ionization itself to locating the *source* of the phenomenon – a significant move that eventually led to her postulating the existence of new elements and also to discovering the new science of Radioactivity. Marie Curie tested ‘pitchblende’, a black, pitchy, mineral ore containing uranium, and found that it was highly active. Pitchblende produced an ionising current much stronger than that produced by uranium alone. Somewhat puzzled, Curie tested her equipment and found it was fine. Then, on 18 February 1898, she compared several uranium salts, pure uranium and pitchblende and found that pitchblende ore was the most active. She then broadened

her investigations to other minerals and found, on 24 February 1898, that the mineral aeschynite, which contained thorium but no uranium, was more active than uranium but pitchblende was more active than either of them.

Curie concluded that Becquerel rays were not uranic, and instead represented a more general phenomenon, which she called 'radioactivity' (Curie 1923: 46). She also made the brave conjecture that the mineral pitchblende had a hitherto 'unknown' new element that was responsible for its greater energy. The investigations that began with testing mineral ores and led to the prediction of new elements may be considered as the stage of *inspiration* or *illumination*. The startling findings got Pierre involved and on 18 March 1898 he joined Marie in her work, giving up his own research on crystals. Their report on 'Rays emitted by Uranium and Thorium compounds', which also predicted the existence of a new element, was presented to the French Academy on 12 April 1898.

The next stage of the Curies' efforts was preoccupied with isolating the new element with a view to confirming their prediction. The work, involving chemical fractionation, was done in collaboration with the chemist Bémont. It suggested the existence of not one but *two* new elements, one associated with the fraction containing 'bismuth' and the other with the fraction containing 'barium'. Although no spectroscopic evidence was available, Becquerel announced, on behalf of Marie and

Pierre, the new element 'Polonium' to the French Academy on 18 July 1898. It was named in honour of Marie's beloved native country. The team led by Marie (and Pierre and the chemist Bémont) had produced a fraction of pitchblende associated with barium which was 900 times as active as uranium.

On 20 December 1898, they were in a position to announce the second new element Radium with confirming spectroscopic evidence to the French Academy. This may be regarded as the confirmation stage akin to the Creator Brahma's role in the Vālmīki story.

The twelve months from December 1897 to December 1898 thus constituted a period of extraordinary effort and creative output in the life of Marie Skodowska Curie. She had made notable contributions to both the passions that formed the 'large quest' that was the driving force in her life.

Marie Curie comes across as the model scientist, fully in control, professional and methodical. There is perseverance and intelligence and a stoic capacity for extraordinary hard work; but apparently no conspicuously startling moments of drama, of sudden flashes of the type that one is apt to expect of a creative personality of her calibre. She would be considered a difficult subject for the student of creativity and in particular of the creative process. Policastro and Gardner (1999, 224), in arguing that a "science of creativity should be able to account not only for patterns but also for exceptions", list Marie Curie as an

exception. As noted before, the various stages discussed in the Vālmīki archetype are clearly discernible in her case. There are no dramatically 'high' moments of illumination; but the period of twelve months from December 1897 to December 1898 appears to have been one of a relatively evenly spread state of 'high' in terms of insight and innovation. Describing this period, her daughter Eve Curie, who first documented her life, comments:

'The moment of discovery' does not always exist: the scientist's work is too tenuous, too divided, for the certainty of success to crackle out suddenly in the midst of his laborious toil like flash of lightning, dazzling him by its fire. Marie, standing in front of her apparatus, perhaps never experienced the sudden intoxication of triumph. This intoxication was spread over several days of decisive labour, made feverish by a magnificent hope.

(Curie 1938: 166)

There is no conspicuous internalisation of the external world of experience as in Vālmīki. However, her deep involvement in the progress of her research at work found its counterpart in her deep involvement in the welfare and growth of her newly born daughter at home. Marie kept meticulous laboratory notes of her work. She also kept an equally meticulous diary of her baby Irene's progress. Biographer Susan Quinn writes:

A NOTEBOOK of Irene's progress during this period serves as a sort of domestic counterpoint to

the lab notebooks. Here are another sort of measurements, recorded with equal care, of Irene's weight, and length, of the diameter of her head, and of the small changes and reversals so absorbing to a mother.

(Quinn 1995: 152)

From 1899 the partnership style of Marie and Pierre changed, with Pierre studying the phenomenon of radioactivity while Marie focussed on the demanding task of isolating radium, a task that involved an enormous amount of physical effort. The saga of her marathon efforts to accomplish the task under very difficult circumstances is itself of epic proportions. She had succeeded by 1902 in isolating one decigramme of pure radium and determining its atomic weight as 225. In 1903, the Nobel Prize for Physics was awarded jointly to Antoine Henri Becquerel, Marie Curie and Pierre Curie.

Marie Curie's work during and subsequent to the period 1897-98 was done under extraordinarily difficult circumstances. Not well connected to the establishment, Marie and Pierre had very little financial support and poor laboratory facilities. Success came because of her single-minded dedication, exceptional capacity for work and for enduring severe hardships: in a sense it was a battle against disadvantages. In this she reminds us of Arjuna's severe penance, capacity for endurance and suffering, and of his battles, but unlike Arjuna she appears to have been free from ego.

2.2 Srinivasa Ramanujan

Ramanujan (1887-1920) was born in an orthodox Brahmin family in a small town in the State of Tamilnadu in South India. The family was poor and not yet part of the newly emerging middle-class, educated in European style colleges and universities. However, the rich, traditional, cultural heritage of the Brahmin lifestyle naturally placed high value on scholastic excellence and the nurturing of the intellect. It is generally acknowledged that his mother, a woman possessed of a powerful personality, had high ambitions for her son and was a major factor in Ramanujan's life. Ramanujan did very well at school in all his subjects, although he was particularly fond of mathematics in which he displayed extraordinary skills and power. He won a scholarship that enabled him, in spite of the family's poverty, to continue his studies at college. Kanigel's (Kanigel 1991) biography of Ramanujan is the source for most of the factual details in this section.

The turning point in Ramanujan's life occurred when in 1903 he came across a book with the short title *Synopsis* by G. S. Carr. G. H. Hardy, the mathematician who played a crucial role in Ramanujan's creative life, later said: "The book [by Carr] is not in any sense a great one, but Ramanujan made it famous". It contained "the enunciations of 6165 theorems, systematically and quite scientifically arranged, with proofs which are often little more than cross-references . . ." (Hardy 1940: 2,3). The book took such a strong hold on Ramanujan that he neglected his

studies, failed his college exams and lost his scholarship. Until this moment, Ramanujan's *quest* had merely been one of general scholastic excellence. The advent of a book like *Synopsis* gave him specific *direction* by helping him to recognise his true interest. He became completely preoccupied with working through the book and establishing the formulae and theorems for himself.

The loss of his scholarship and his family's continuing poverty ended Ramanujan's formal college education, but gave him the luxury of time in which to indulge in his passion for mathematics. The years 1903-12 and, in particular, the period of six years from 1904 to 1909 which followed his reading of *Synopsis*, form the first phase of intensive work and creative output by Ramanujan. The results written up in his famous 'notebooks' were generally stated as formulae or theorems with very little in the nature of proof. A closer examination eventually revealed that much of it was independent rediscovery of the results of some of the greatest early mathematicians; some results were wrong, but there were a significant number of genuinely new results.

Despite his simplicity and unassuming nature, Ramanujan had an innate confidence in his own ability as a mathematician. He had no hesitation in using his notebooks as evidence of why he needed financial support to continue his work. As a result he came to be known by many prominent Indians and Englishmen in Chennai (Madras) and eventually wrote a long letter to Cambridge Professor

G. H. Hardy, stating some of the results from his notebooks. Hardy, being initially sceptical of claims by unknown people, put the letters aside, but not before glancing over them. He then found that he was drawn by what he had briefly seen to take a second look. He was to conclude that the author was "a mathematician of the highest quality, a man of altogether exceptional originality and power" (Kanigel 1991: 169). Ramanujan came to Trinity College, Cambridge, in April 1914 and thus began his second period of intensive work and productivity that lasted till his early death in India in April 1920. Coming to Hardy's notice was a very critical event in Ramanujan's life, because Hardy's expertise was in the same area as Ramanujan's interests. The sense of *direction* that Carr's book gave could be considered as reaching both its goal and its end in the meeting with Hardy.

Ramanujan felt secure intellectually in Cambridge, enjoying the company of eminent mathematicians who understood his work and recognised his worth. Hardy was his personal tutor in aspects of mathematics, though he did attend a few lectures by others. His raw creative energy, now tempered by exposure to the discipline of academia, was as fertile as ever. A number of papers followed in reputable journals, some by himself and others written jointly with Hardy. In 1918 Ramanujan became the second Indian to gain the distinction of being elected as a Fellow of the Royal Society of London. Just three months earlier he had been elected a Fellow of the Cambridge

Philosophical Society, and in October was elected Fellow of Trinity College. Failing health forced him to return to India in March 1919, before he could sign the Royal Society register, ostensibly to get well so he could return to Cambridge. However, he was apparently suffering from advanced tuberculosis and passed away on 26 April 1920, at the age of just 32. Even during this last year, while on his deathbed, Ramanujan was busy working on “mock-theta functions, q-series, and related areas, filling page after page with theorems” (Kanigel 1991: 325). According to the mathematician G N Watson:

Ramanujan’s discovery of the mock-theta functions makes it obvious that his skill and ingenuity did not desert him at the oncoming of his untimely end. As much as any of his earlier work, the mock-theta functions are an achievement sufficient to cause his name to be held in lasting remembrance.

(Kanigel 1991: 324)

Ramanujan’s short life of “rags-to-intellectual-riches” held all the mystery and romance that “might be lifted almost unchanged by a scenario-writer for the talkies” (Kanigel 1991: 4). In his first period of creative output, during 1903-1912, Ramanujan relied entirely on his own raw creative potential. He was essentially untrained and worked in an ambience that was neither congenial nor able to provide affirmation of the worth of his work. The second

period from 1914 to 1920, most of which was spent in the sympathetic and mathematically stimulating climate of Cambridge, was very different.

He was equally prolific in the quality and quantity of his creative output during both periods. Hardy, who became intimately aware of Ramanujan's work during both the periods, said: "One gift [Ramanujan's work] has which no one can deny, profound and invincible originality" (Kanigel 1991: 372). The remarkable feature of Ramanujan's work was that most of his results were more in the nature of revelations or conjectures. His immersion in his work was complete and the formulae and theorems he wrote down were often the result of unusual insight rather than outcomes of rigorous mathematical deductions. Eminent mathematicians would need weeks and longer to prove (and in some cases disprove) some of the results. Even now the question of how Ramanujan obtained his results persists, and is shrouded in mystery especially among mathematicians intimately aware of his work.

Typical responses are "We have no idea how he did the marvellous things he did" and "The enigma of Ramanujan's creative process is still covered by a curtain that has barely been drawn" (Kanigel 1991:280). Writing of Ramanujan's contribution in the famous joint paper with Hardy on 'partitions', the mathematician Littlewood wrote: "There is, indeed, a touch of mystery here . . . there seems no escape, at least, from the conclusion that the discovery of the correct form [of a mathematical expression] was a

single stroke of insight” (Kanigel 1991: 280-281). Ramanujan himself claimed that after hard work and no success, his family deity, the Goddess Namagiri of his native town, revealed the results to him in his sleep.

The initial undefined *quest* begins to take a definite shape with the discovery of Carr’s *Synopsis*. Ramanujan gains full legitimacy in the mainstream mathematical world with Hardy’s entrance into his life. Thus initially Carr and later Hardy play a role similar to Nārada’s in the *Rāmāyaṇa*. Hardy also embodies the role of the Creator Bramha in providing *confirmation* of the nature and quality of Ramanujan’s work. Ramanujan’s initial request to Hardy was modest; he wrote: “What I want at this stage, is for eminent professors like you to recognise that there is some worth in me” (Kanigel 1991: 176). For all his genius, he worked extremely hard at his mathematics: his life consisted almost exclusively of mathematics. His wife reported that even when he was extremely ill and dying in his last year, he was always at work in his sick bed. The process of internalisation appears to have been so complete that his external mathematical world was one with his internal world. Vālmīki’s poetic outburst occurred at the moment of internalisation of an external event. It is probable that Ramanujan’s highly internalised struggle with mathematics continued even in his sleep. Ramanujan would see the mathematical illuminations occurring in his sleep as solutions revealed to him by the Goddess Namagiri. Despite his capacity for hard work and suffering, his

moments of *illumination* seem to be more akin to Muchukunda's, in common with the many distinguished mathematicians mentioned above at the end of Part One.

2.3 Patrick White

The Australian author Patrick White (1912-1990) won the Nobel Prize for Literature in 1973. He was born in London to a wealthy family of graziers from the Australian state of New South Wales, where the family returned when he was six months old. A sensitive, shy and apparently precociously perceptive child, he grew up resenting and yet admiring his dominant mother Ruth. He also seems to have had an unrealised and unexpressed affection towards his mild and ineffectual father: "had I been able to talk to him, and if . . . there had been some vaguely intellectual ground on which we could have met, I would have loved my father" (White 1981: 48). By contrast, he resented "my mother's determination to do everything for my own good, which included dumping me in a prison of a school on the other side of the world " (White 1981: 9). The young Patrick was educated at Cheltenham, in the UK, and later went to Cambridge University where he had a routine and not particularly distinguished academic sojourn. A comfortable allowance from his father enabled him to remain in London for a few years after Cambridge with a view to establishing himself as a writer. During this period he met Roy de Maistre, an Australian painter living in London who was " twenty years older than I. He became

what I most needed, an intellectual and aesthetic mentor. . . He also taught me to discipline myself as an artist" (White 1981: 60). White volunteered for service during the Second World War, serving mainly in Egypt and the Middle East as an intelligence officer in the Air Force. After the war he decided to return to Australia, in a significant break with the increasing trend of many talented Australian musicians, painters and writers who felt it necessary to live in a big European city in order to make a name for themselves.

Three perhaps related features appear to characterise White's personality as a creative human being. These were: the intensity of his relationship with his mother, to which I have referred above; his homosexuality; and his sense of marginality, a feeling of being an outsider. As regards the second, he seems to have comfortably acknowledged his homosexuality at an early age, and during the war years formed a friendship with Manoly Lascaris which lasted till the end of White's life. Lasting relationships were to become a favourite theme in White's writings. White acknowledges Manoly as the stabilising factor, the 'solid mandala' in his life, especially as a creative writer.

Perhaps suggestive of the relationship between his creativity and the three features referred to above, White remarks: "what we inherit can never entirely be denied . . . I feel more and more, as far as creative writing is concerned, everything important happens to one before one is born" (Marr 1991: 4).

In contrast to our other two subjects, and perhaps because he was a writer, we have the benefit of White's own insights into his creative persona. White wrote poems and a few successful plays, but it is through his novels that he made his name. Among them are: *Happy Valley* (1939) (his first novel) *The Aunt's Story* (1958), *The Tree of Man* (1956), *Voss* (1957), *Riders in the Chariot* (1961), *The Solid Mandala* (1966), *The Eye of the Storm* (1973) and *The Twyborn Affair* (1979). His other notable work is *Flaws in the Glass* (1981). This work is autobiographical, but not in the conventional sense. In it, the full force of his writer's sense of perception and power is directed at giving an unusually candid view of himself and others in his life, and also of his life as a creative writer. On account of this self-critical focus, *Flaws in the Glass* is a book on which I rely primarily in my analysis of White's creativity. I have also relied to a lesser extent on two books by David Marr, the biography *Patrick White: a Life* (1991), and *Patrick White: Letters* (1994), based on White's correspondence.

Patrick White is regarded as post-European Australia's first truly great writer, a literary pioneer who gave a unique expression to the spirit that pervades and governs life in a unique landscape encompassing a vast brown emptiness sprinkled with occasional greenery. His Nobel Prize citation reads: "To Patrick White for an epic and psychological narrative art which has introduced a new continent into literature" (Marr 1991: 535). The Swedish poet and literary journalist Artur Lundkvist's view of *The*

Eye of the Storm applies equally to White's writing as a whole:

a universally valid enquiry into the terms of human existence... sombre and free from illusion ... devastating in his satire... he never loses his feeling for the wonder of life in the midst of degradation... he further heightens the power of his language... articulating the well-nigh inexpressible, the fleeting and the quintessential... a pioneer, breaking new ground in contemporary literature.

(Marr 1991: 534,535)

White appears to have become aware of his need to find expression in writing while he spent some time as a jackeroo (apprentice farmhand) in Australia, between school and university in England. "No, it was not so much a case of growing consciousness as a matter of necessity. Surrounded by a vacuum, I needed a world in which to live with the degree of intensity my temperament demanded." (White 1981: 46).

The desire to find expression as a writer may be regarded as the *large quest* defining White's creativity. During this period he wrote three novels which were never published, though "bits of the first two surfaced in later work; the third gave me the foundations of *The Aunts' Story*" (White 1981: 46). He chose "fiction, or more likely it was chosen for me, as the means of introducing to a disbelieving audience the cast of contradictory characters of which I am composed." (White 1981: 20). The choice of

fiction as the medium would define the stage of *direction* to his creative writing. This choice also defines the nature of his internalisation; he writes, "In early manhood I began to see that the external world was no other than the dichotomy of light and darkness I sensed inside me" (White 1981: 34). This dichotomy manifested itself in White as a man of stark contrasts. He was extraordinarily compassionate for fellow humans in suffering, supported aboriginal causes at a time when it was not fashionable for people of his class and standing to do so, gave thousands of dollars to various charities, anonymously helped friends in trouble (Marr 1991: 521). Yet he was uncompromisingly harsh and judgemental of people in his life, especially close friends with whom he fell out, and could unleash the power of his gifted tongue to the point of cruelty upon those of whom he disapproved.

As a writer White seems to feel that he embodies in both a physical and emotional way the full range of 'being' to which he gives expression in his novels. Of the impact of his homosexuality on his role as a writer he says:

"I see myself not so much a homosexual as a mind possessed by the spirit of man or woman according to actual situations or the characters I become in my writing. This could make what I write sound more cerebral than it is. I don't set myself up as an intellectual. What drives me is sensual, emotional, instinctive. At the same time I like to think creative reason reins me in as I reach the edge of disaster".

(White 1981: 81)

He adds that “ambivalence has given me insights into human nature, denied, I believe, to those who are unequivocally male or female . . . I would not trade my halfway house, frail though it be, for any of the entrenchments of those who like to think of themselves unequivocal.” (White 1981: 154). On apparently looking older than his years, he wryly comments: “Perhaps it is the price a novelist pays for living so many lives in the one body” (White 1981: 113). As a respected playwright, who once tried to become an actor, the ‘actor’ in him seems to be ever alert both as a human being and as a writer. His insights into the human condition from the vantage of the ‘halfway house’ found ample scope in the novel *The Twyborn Affair*. The main character experiences life in both the male and female forms, assuming the successive identities of Eudoxia, Eddie, and Eadith. White thus shares the high state of *internalisation* common to Curie and Ramanujan and also found in Vālmīki in the archetypal story.

After being demobbed from the Air Force at the end of the war, White resumed his writing: “My creative self, frozen into silence by the war years, began to thaw . . . started writing the novel which became *The Aunt’s Story*. I can’t say it poured on to the paper after the years of draught; it was more like a foreign substance torn out by the handfuls.” (White 1981: 127).

Ironically it was during the isolation and hardship of war in the deserts of the Middle East that he got the idea for

a novel about a megalomaniac explorer. "A seed was sown in what had the appearance of barren ground. It germinated years later in a public ward of a Sydney hospital where I had been brought . . . during one of my most violent asthma attacks" (White 1981: 103). On his return to Australia and doing some research, White found that his idea of Voss seemed to resemble the character of Leichardt, an "unusually unpleasant" German explorer who had attempted to explore the Australian continent. But as White wrote, "The real Voss [also German], as opposed to the actual Leichardt, was a creature of the Egyptian desert, conceived by the perverse side of my nature at a time when all our lives were dominated by that greater German megalomaniac" (White 1981: 104). The fictional Voss was based on the explorer Leichardt but was not meant to be a historical reconstruction of the latter. The initial reaction from the academics "*demanded facts rather than a creative act*" though eventually it was hailed as a great work.

David Marr observes that "suffering is a theme that runs through all White's work but *Voss* is . . . an account of its [suffering's] virtues" (Marr 1991: 311). Marr refers to White's use in *Happy Valley* of Mahatma Gandhi's words on the law of suffering: "the purer the suffering, the greater the progress." He notes that White saw suffering as a force in his life. Indeed White was to say: "I have always found in my own case that something positive, either creative or moral, has come out of anything I have experienced in the way of affliction" (Marr 1991: 312). Voss's quest was to

reach the sea on the other side of the continent (Australia). He is proud, harsh and tough on members of his expeditionary team to the point of cruelty. In a perceptive analysis Marr notes the parallel between the sufferings of Voss in the Australian desert and the pain White himself experienced writing *The Tree of Man*. Marr observes:

Both men were explorers: Voss on horseback crossing the continent and White at his desk trying to fill the immense void of Australia. Writing of the two expeditions, White used the same rhetoric of men stripped bare of almost every thing they once considered 'desirable and necessary' in order to realise their genius. "

(Marr 1991: 312)

Voss declares: " every man has a genius, though it is not always discoverable . . . It is possible . . . to discard the inessential and to attempt the infinite. You will be burnt up most likely . . . but you will realise the genius" "(Marr 1991: 312).

Though his expedition was unsuccessful, "through his suffering in the desert, Voss conquered his pride" (Marr 1991: 312). White, who refers to his own vanity and pride in *Flaws in the Glass*, is himself led to humility via a 'fall':

During what seemed like months of rain I was carrying a trayload of food to a wormy litter of pups down at the kennels when I slipped and fell on my back, dog dishes shooting in all directions. I lay where I had fallen, half-blinded by rain,

under a pale sky, cursing through watery lips a God in whom I did not believe. I began laughing finally, at my own helplessness and hopelessness, in the mud and the stench from my filthy old oilskin. It was the turning point. My disbelief appeared as farcical as my fall. At that moment I was truly humbled.

(White 1981: 144)

Fictional Voss and his creator White both remind us of Arjuna's moment of realization when, in the struggle against the *kirāta*, he is stripped of all that he considered 'desirable and necessary' to make up his identity as the great warrior hero. White's realization of humility was genuine and lasting: "Certainly the state of simplicity and humility is the only desirable one for artist or for man. While to reach it may be impossible, to attempt to do so is imperative" (Marr 1991: 312). However, it seems to have been of little help to him as a writer. He found it a great struggle to sit down and write; the prospect of facing up to his own enormous creative persona must have been daunting as it is to many gifted artists, painters, musicians and the like. Alcohol was the means he resorted to in order to 'face up', a habit he was unhappy about, and regarded as his disease. But in the words of David Marr, White felt that "if he lost his disease, he would also have lost his gift (of writing)" (Marr 1991: 525). In a sympathetic letter to a friend for whom it was 'an act of will to walk' because he was 'physically frightened', White says: "In only a slightly different way it is an act of will for me to sit down at my

desk everyday and start work: I am mentally very frightened indeed”(Marr 1994: 401).

In the same letter he speaks of the patience needed in creative effort: “I do think you have to continue waiting for a lead: just as I sometimes sit for days at my desk, doodling and hoping, then suddenly I find that the clue has been given to me already in the blackest of the doodles.”

Patrick White saw his writing “as an offering in the absence of other gifts” (White 1981: 143); as, stripped of all else in his reduced state of bleeding flesh, Arjuna can only offer a flower to a crude mud idol of Śiva. White’s struggles as a creative writer parallels Arjuna’s against the *kirāta*:

What do I believe? I am accused of not making it explicit. How to be explicit about a grandeur too overwhelming to express, a daily wrestling match with an opponent whose limbs never become material, a struggle from which the sweat and blood are scattered on the pages of anything the serious writer writes? A belief contained less in what is said than in the silences.

(White 1981: 70)

Part Three: The Connection Between Myth and Life

3.1 The myths

My intention in looking at the three myths from Indian mythology is primarily to see what they can tell us about ourselves as creative beings. I suggested that the story of

how Vālmīki wrote his great epic may be seen to provide a complete archetype of the creative process. A possible five-stage model consisting of (i) Quest, (ii) Direction, (iii) Illumination, (iv) Confirmation, (v) Product, was also postulated. While it is possible to discern all the five stages in the stories of Arjuna's quest for Pāsupata and of Muchukunda's Awakening, the main interest of these two stories is the perspective they provide on the 'creative moment' or the stage of illumination. Of course, this view I am exploring is not the only possible one of the creative process; indeed others with greater sensitivity and insight might have a different perspective. My theory is that the stories have something very insightful to say about human creative endeavour.

The Vālmīki story has even greater credentials for completeness than we have made out so far. The fourth *sarga* of the first book tells us of the 'publication' of his masterpiece. The core story of the *Rāmāyaṇa* is the exile of Rāma, his wife Sīta and his brother Lakṣmaṇa in the forest for fourteen years, and the abduction of Sīta during this period by Rāvaṇa, the powerful Demon King of Lanka. In an epic battle Rāma slays Rāvaṇa and, reunited with Sīta, returns triumphant to regain his kingdom from his brother Bharata who, unlike the Kauravas in the *Mahābhārata*, is only too happy to acknowledge the true king. Vālmīki composes the story after Rāma's coronation as king, and as he is pondering "who should perform it?" two bright young twins, Kuśa and Lava, come to him in the guise of sages

and fall at his feet. Vālmīki accepts them as disciples, teaches them the sacred texts and also the poem *Rāmāyaṇa*. They had beautiful voices and were expert performers: “And when they had done so, the two great and gifted men, who understood its essence and were marked by auspicious sign, sang as instructed, with single-minded concentration before assemblies of seers, brahmins and good men” (Goldman 1984:132).

Their fame spreads and King Rama sees “those two singers who were being praised everywhere on the roads and royal highways.” What he does not realise is that Lava and Kuśa are his own sons: “Like twin reflections they seemed, born of the same image, Rāma’s body” (Goldman, 132, verse10). This is because, after his return to Ayodhya, Rāma feels obliged for reasons of state to exile Queen Sīta because she has lived in the palace of Rāvaṇa. Sīta at the time of exile is pregnant with Rāma’s progeny. The twins are born in exile in the forest. There is thus a poignant irony in the story of the ‘publication’ of Vālmīki’s work. Lava and Kuśa are invited to give a special performance in the royal court:

“Let us listen to this tale, whose words and meaning alike are wonderful, as it is sweetly sung by these two godlike men.

“Then at a word from Rāma, the two of them began to sing in the full perfection of the mārṅga mode. And right there in the assembly, even

Rāma, in his desire to experience it fully, gradually permitted his mind to become enthralled” (Goldman 1984:133, 134, verses 25 and 27).

Mārga refers to the mainstream or grand tradition, as opposed to *dēsi*, the local or provincial tradition. It indicates the pan-Indian significance of the *Rāmāyaṇa*. Thus the *Vālmīki* story provides a vision not only of the production of a creative work but also of its acceptance by an audience. In the so-called Systems approach (Csikcentmihalyi, 1999), Creativity is constituted by the three components of the system: the Individual, the Domain and the Field. The individual is the creator, the Domain is the area of activity – in *Vālmīki*’s case poetry – and the Field consists of the gatekeepers, the discerning audience who must assess it and accept it. The *Vālmīki* archetype may therefore be considered as a vision of a complete System even from the point of view of the systems perspective.

There are parallels between the stages identified in my discussion and the stages identified in the Helmholtz model (Martindale, 1999) of the creative process. The Helmholtz stages are: Preparation, Incubation, Illumination or Inspiration and Verification or Elaboration. My stages three and four of creative inspiration and confirmation respectively, correspond to the Helmholtz stages of Illumination and Verification. Incubation, the period of quiet after intensive effort, is much closer to the

Muchukunda model where illumination occurs in the quiescent state after a period of struggle. It is worth drawing attention here to experimental evidence for the phenomenon of illumination or insight. Ward, Smith and Finke (1999: 195) report experimental investigations in creative cognition, which provide “empirical evidence of insight”, as opposed to historical reports “such as of Poincare’s Mathematical Insights”. In a discussion of the role of extrinsic and intrinsic motivations in creative effort, Collins and Amabile (1999: 299) note: “ego involvement prevents detachment from the task and interferes with a person’s ability to set aside conventional ideas in favour of less safe and more creative ones.” The observation is pertinent to our analysis of Arjuna’s battle with Śiva in the Pāśupata story.

3.2 The cases: Curie, Ramanujan and White

These three individuals were picked primarily because they were extraordinarily creative and interesting people. Marie Curie is a typical Stoic battling against odds with heroic equanimity. Ramanujan is a case of raw genius at work. Patrick White is the tortured artist suffering in order to find expression for his creativity. My inquiry into these individuals was an open one, in the sense that there was no expectation of a ‘perfect fit’ with the archetypes from the myths. Indeed Marie Curie is considered a rather difficult case, ‘an exception’, as Gardner points out. Her 67 years were full of achievements: to have secured a Nobel Prize in

1903 at a time when women as a class had hardly any access to higher education, particularly in the natural sciences, was impressive enough, but to repeat the feat with another one in her own right in 1913 was simply staggering. Her life contained elements of high drama as well: tragedy, romance and scandal. Our focus in this study is on just one fascinating year in her life.

Ramanujan's creativity was baffling to his colleagues and biographers alike as may be seen from some of the comments quoted earlier. Kanigel discusses some of the difficulties in the section entitled "Ramanujan, Mathematics and God" in his biographical book on Ramanujan. As I mentioned, the most intriguing aspect was how he arrived at the extraordinary results, which he wrote down almost without any proof after intensive work. At first glance, even Patrick White, with his somewhat eccentric social behaviour and admitted dependency on alcohol, does not look like a likely candidate to be understood in terms of Indian myths.

As it turns out, our analysis of each of our subjects does not confine itself to any single myth exclusively. Marie Curie's creative mode appears closest to that of Vālmīki, and yet her persistent and heroic moral and physical struggle against odds, as a woman, as a foreigner with no connections to the establishment and hence to patronage, reminds us of Arjuna, in the unusual guise of an ascetic, battling against the unknown kirāta. Patrick White's struggles against his own conscious self is also like

Arjuna's defeat of his inner ego, but in his obsessive preoccupation with seeking perfection in life, in his fascination with good and evil, White resembles Vālmīki. Vālmīki's story is also like Ramanujan's broader, undefined quest, his outbursts of creative insight, which take definite shape under the mentor-like influence of Carr's book and are established by the patronage of Hardy. Ramanujan's epic capacity for hard work in difficult circumstances, even in the face of death, is similar to Arjuna's heroic battle. Like Poincare and Gauss he also has sudden Muchukunda-like revelations in the apparently 'inactive' period after intensive work.

3.3 Conclusion

So, what has this study revealed? Is it too much to claim that the attempt to understand the creative efforts of contemporary human beings in terms of the stories of quests, struggles and fulfilment (or failure) in our myths, is a rewarding and enriching exercise? The enrichment is a two way process. Myths can provide a frame of reference and perspective to help us evaluate contemporary human endeavours. In turn, the creative endeavours help us elucidate and interpret myths, their meaning and the reasons behind their formation. It is often in this sense that we say that myths are forever contemporary. Our current views and experiences of creativity and the creative process prompted this study of three myths (and potentially numerous other myths) as possible archetypes of human

creative endeavour. The dual relationship between myth and life should not surprise us; myths are after all the continuously modified, enhanced and cumulative records of the visions, aspirations, struggles and acquired wisdom expressed in the oral and literary heritage of the various human communities on earth.

The myths I have considered are Indian but two of the three subjects are not. The present study therefore is also a modest contribution to cross-cultural studies on creativity and the creative process. Myths are universal, in whatever story, being expressions of the elemental human visions and aspirations. Albert and Runco (1999) and Lubart (1999) suggest that creation myths may provide a prototype for implicit conceptions of human creativity. There can be no issue with this view, since creation myths are *part* of the mythical traditions of different peoples and are certainly worthy of study in this context. However, the articles make some drastic generalisations from Christian and Hindu creation myths to articulate 'Western' and 'Eastern' concepts of creativity and hence attitudes to the creative enterprise.

Based on the biblical story of creation in Genesis, Albert and Runco observe that "Christianity . . . played a leading role in the discovery of our power to create." This they perceive to be significantly different from the Eastern view according to which, for the Hindus, Taoists, and Buddhists, "creation was at most a kind of discovery or mimicry". Therefore it would follow that "the idea of

creation of something *ex nihilo* had no place in the world of yin and yang". Lubart (1999) considers this question in greater detail in his article 'Creativity Across Cultures'. Using Hallman (1970), Lubart notes "the reduced emphasis on originality as the greatest difference between Hindu and Western definitions of creativity. In Hindu cosmology, time and history are seen as cyclical." Therefore "in the Eastern view, creativity seems to involve the reinterpretation of traditional ideas – finding a new point of view – whereas in the Western approach, creativity involves a break with tradition." For Lubart, it therefore follows from the respective creation myths that "if Eastern creation (and human creativity) can be characterised as a circular movement in the sense of successive reconfigurations of an initial reality, then the Western view of both creation and human creativity seems to involve a linear movement toward a new point." The West looks upon creativity as the ability to produce work that is novel and appropriate, to produce an observable product, whereas the East sees it as a "state of personal fulfilment, self-realisation or a religious, or spiritual expression".

Lubart makes extensive use of an important and pioneering study by Maduro (1976) of two communities of Vishwakarma Brahmin painters whose life is centred around the Nathdwara temple in Rajasthan, India. There are two problems with Lubart's use of Maduro's work in his generalisations to Eastern views on creativity. Firstly the focus of the painters' work is explicitly religious, being

centred around the Nathdwara temple. This would be akin to making a generalisation of Western views based on a study of religious painters of whom there exist many, even now, in the Judeo-Christian tradition.

The second problem is a much more serious one. Maduro's study is important because it makes a major contribution to the debate about whether traditional Indian sculptors and painters should be viewed simply as highly skilled crafts-persons or as creative artists. It is instructive to quote from Maduro's Chapter VII titled 'Style and creativity in traditional Nathdwara painting':

I have already tried to make it clear that folk and tribal artists are not "just" craftsmen or artisans who by definition never participate in the creative process (Maduro, 1976, 118). Thus, the study of art – if art is studied at all – has usually meant a preoccupation with product ("material culture") or socioeconomic function . . . with very little attention given to cross-cultural comparisons of the creative process or personality.

(Maduro 1976:119)

Maduro is critical of the eminent art historian Coomaraswamy who, in his view, emphasises "the archetypal and perhaps the cultural at the total expense of the personalistic level of analysis." He quotes Coomaraswamy as saying: "The last desire of the traditional artist is to be original: he only endeavours to be true." Maduro responds: "This assumption, that the

traditional artist is “only” something other than creative and individual, permeates much of what Coomaraswamy and other influential art historians write.” The central message of Maduro’s study is that the primary urge behind the work of the traditional artist is the creative one. Lubart’s superficial examination seems to miss this essential point.

The simplistic generalisation articulated by Lubart and others seems to have been influenced by two factors. Firstly, the post-renaissance West has played a dominant role in Science and in innovative Technology resulting in new ‘products’. Secondly there is the widespread perception that Hinduism and Buddhism are primarily mystical and meditative, focussing on the experiential inner world rather than on the materialist external world. It is necessary to note in this context the Christian West’s rigid interpretation of Semitic creation myths and the Aristotelian notion of a geocentric universe that led to the climate in which people like Galileo were persecuted. A significant number of champions of ‘creation science’ in the West are people with high formal qualifications in science and technology. It is feasible to speculate that it was the rigid, inelastic readings of the creation myths and the resulting authoritarian ambience that provided the impetus to “break with tradition” (Lubart, 340) in the West. In Hinduism there is no single creation myth; there are instead several references to creation in the sacred and epic literatures ranging from the agnostic ‘Song of Creation’ in the *R̥gveda* (Zaehner 1932: 11,12) to the story of the

'churning of the milk ocean' in which a number of 'products' are created, including the life giving *amṛta* (elixir of immortality) and its opposite, the destructive *viṣa* (poison).

The purpose of this brief digression is not to mount an energetic defence of non-western cultures and their claim to being creative. Rather, it is to point to the relative ease with which unwarranted generalisations can be made in cross-cultural studies in general and with respect to creativity in particular. The risk in generalising is akin to the error of inferring, from a possible strong correlation, a causal relationship between factors.

I have attempted in this article to carry out a conjoint study of three Indian myths and of three creative individuals from different linguistic, cultural and geographic backgrounds. Their particular areas of activity are also different: spanning experimental science, mathematics and literature. The purpose has been to explore as to what such a study could tell us about the creative process, the creative moment and about creativity in general. The exercise has provided some insight in to these individuals as creative human beings. We have seen that the story of the first-poet Vālmīki can serve as a complete paradigm for the creative process. The Arjuna and Muchukunda stories do have all the elements of the paradigm but they are primarily examples of the interplay between ego and creativity. The present study is an example of two-way illumination: myths can help us

understand life and life can help us contextualise myth. It is not that Indian myths are special; it is that mythology from different cultures, including the creation myths, can provide a valuable and enriching window to understanding facets of creativity and the creative process.



Footnotes and Acknowledgements

Footnote to asterisk on page 5.

Another interpretation commonly seen is “Hunter! May you not live long” meaning the hunter is cursed to die. The phrase ‘śaśvatīḥ samāḥ’ suggests eternal years and somehow does not seem to go well with a death sentence. A more common understanding of ‘pratiṣṭhā’ is ‘stay fixed’ in one place. The *Rāmāyaṇa* is a human story but it also has a strong symbolism of the interplay and clash between settled – cultivated – land and the unsettled forest. Sita, over whom the great war is fought, is the daughter of the Earth, found when her father Janaka was ploughing the land. The hunter’s killing of a bird in ‘loving union’ is not merely a cruel act in itself: it is also inimical to a ‘sustainable’ use of his resource making him an eternal wanderer. The particular interpretation preferred is not critical to our present study.

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