

प्रीति मावती

हो यो हाकिनी, याकिनी

खं सं
श्री काल
शत वरु, श्रुति वरु
उद्भासाय, संवर्षत
श्री गणेशाय, नमः
काली वरु
शक्ति का

खं
श्री त प्रसि

हां हां



हं, श्री काल कषु वरु, विशुद्धि वरु,
उरु गाम्नाय, सदा निवर्षत, श्रान भक्ति
प्रशु ल, श्वव प्रवर्, काकि प्रसि॥

शुं मैं हा व लुयां ल
य प्रसासा
हं हं
विश्व श्वर



सांसा किनी
शासा काली

श्री सिद्धि लक्ष्मी

विद्या न वा कृती ॥

सं वरु, श्री काल कषु वरु, नमः
त वरु, यश्वि मासाय, श्वर

कां का किनी, नमः
काली



Dhāranā from the Perspective of Computer Science

Gábor Pék, Gejza M. Timčák

This paper attempts to link selected sādhanā protocols to software engineering and explains their effect on making the sādhanā more effective. Similarly, after having tested the described techniques, it suggests a number of positive results in applying these concepts and protocols to sādhanā. The application of sankalpa to these new areas helps to optimize the time management without losing the depth of the sādhanā.

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← *Crown, Brow, Throat Chakras, Nepal 17th Century.*



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1 Introduction

The objective world [1] including the mind and all the processes of the senses are consciousness alone just like the subject (i.e., Sa. *aham, I, Śiva*) itself. As Vivekananda says, God only is (Sarvapriyananda 2023, 58:06). However, due to the illusionary effect of the “limiting powers” (i.e., Sa. *six kañcukās* including *māyā*) this consciousness undergoes transformation [2] and is perceived as an independent object (Sa. *aham, idam*) for persons without self-realization. Still, this transformation alone gives rise to all the animate and inanimate objects and life processes that surround us day by day. Ancient philosophies like Sāṅkhya, Advaita Vedānta, Kashmir Śaivism (here Trika) are intuitive explanations, revelations, and experiences to answer the most significant questions of existence, for example, to understand the nature of our sufferings and provide effective remedies for them.

The goal of this paper is to highlight key similarities between the world model elaborated in the Trika philosophy and the principles of modern computer science and cybersecurity with the hope of helping *sādhakas* affected by current computer technologies. On the top of that, we show how well-known exploitation techniques can be utilized as *dhāranā* practices in yoga.

2 World Model

The ancient sages of India worked out various philosophical systems over the millennia the sole purpose of which was to model our very existence and its characteristics. However, Kashmir Śaivism, the central philosophy of tantrism, is not one of the systems of Shad Darśana (Sāṅkhya, Yoga, Nyāya, Vaiśeṣika, Mīmāṃsā, and Vedānta), but we bend upon inspiring from their model and nomenclature due to its extensive elaboration on the subtle nature of Ultimate Reality. At the same time, we solely focus on those aspects that fits the needs of this paper.

For this reason, in the following we suggest a simplified world model by drawing similarities between the principles of the Trika system and that of computer systems. The only reason of such an attempt is the create certain reference points for the mind to help practitioners map better some ancient concepts with the modern terms of information technology. Our main guide rail will be aligned to the concept of *tattwas* that are creator principles that build up the empirical world and what is beyond. Table 1. proposes some corresponding terms of software engineering/computer science to the aforementioned *tattwa system*.

Tattwas Grouped	Tattwas	Corresponding Term in Software Engineering/Computer Science
Five Mahābhūtas	Prthivi, Jala, Agni, Vāyu, Ākāśa	Input and output of an application (e.g., text input)
Five Tanmātras	Gandha, Rasa, Rūpa, Sparśa, Śabda	Communication, interaction (e.g., network request and response, disk read and write operation)
Five Karmendriyas	Upastha, Pāyu, Pāda, Pāni, Vāk	Output handling (e.g., functionality preparing sound output to be played on a speaker)
Five Jñānendriyas	Ghrāna, Rasanā, Caksu, Tvacā, Śrotra	Input handling (e.g., functionality to parse, sanitize user inputs)
Three Antahkaranas	Manas, Ahamkāra, Buddhi	Application (i.e., algorithms to make the application work as expected)
Prakṛti		Software environment for the life cycle management of the application (e.g., tooling, software development environment)
Purusa		Runtime environment to execute and destroy the application created
Kañcukās	Rāga, Vidyā, Kalā (Niyati, Kāla), Māyā (Mahāmāyā)	Limitations to protect the application and the runtime environment (e.g., security armors)
Śuddhatattvas	Śuddhavidyā, Íśvara, Sadāśiva, Śakti (Anāśrita Śiva)	Operating system, virtual machine, hardware

Table 1. Suggested correspondence between tattwas and terms in software engineering/computer science. The tattwas in parentheses indicate the differences between different Śāstras and the Trika Āgama (Abhinavagupta 2017, 27–28, 102).

3 Reality Escape Using Sankalpa

In our model, an application can be imagined as a being (e.g., deity, asura, human, animal, insect, animate objects, etc.) that lives in a “world” (Sa. *loka*) created by Prakṛti. From a “dualistic” (Sa. *apara*) point of view, the higher lokas (Woodroffe 2017, 25), such as Satya loka, are inhabited by deities who are willing the help one in one’s sādhanā if one’s maturity is satisfactory enough. Purusa and Prakṛti are inseparable so altogether they are viewed in our model as a runtime environment that allows for creating, sustaining and destroying life processes, applications, simply put, beings. Each application is a composition of bytes, just like all the animate and inanimate objects that are the expressions of the *spanda* (Sa. spiritual dynamism without any movement in itself but serves as a cause of all movements) principle (Vasugupta 2014, xvii, 112). So, a specific byte (e.g., the hexadecimal C3 is the decimal 195) can be considered as a letter of the Sanskrit alphabet, which is a *spanda* in itself. The only difference that the multiplicity of a byte (8 bits) is not 50, but 256 as 0 and 1 can be represented in 256 different ways on 8 bits, which is a historical foundational data unit of computer architectures. From this point on, the similarity between words, mantras, instructions, or data sequences is inevitable. For example, the byte of C3 can be evaluated as a 1-byte-long instruction (e.g., ret, return) on CISC (i.e., Complex Instruction Set Computers) architectures. Similarly, the “h” (Sa. *visarga*) letter on its own refers to the specific operation of “reflection” (Sa. *pratibimba*) (Laksman Joo 2020, 40). However, the mantra of “sauh” comprises three letters “s”, “au”, and “h” just like the 0F 01 D5 (XEND, transaction end) instruction of certain Intel CPUs (i.e., central processing unit). Thus, the entire instruction set of a computer architecture can be viewed as a *collection of words* (Sa. *vāk*) or mantras that is capable of expressing the nature of our very existence. Our “attention”, or “cognition” (Sa. *jñāna shakti*) can be viewed as the position of the instruction pointer that tells the CPU what instruction to run next. We could go even further with more subtle details; however, the goal of the paper is only to give a framework to help move forward with a real sādhanā the attempt of which is expanded in the following chapters.

One of the very first steps to enter the “detached state of mind” (Sa. *vairāgya*) is to direct one’s attention to a meditation object, for example, a mantra. However, most of the time the mantra is repeated by one’s willpower and effort, which create an extra noise in the process and let the mind wander in its earlier “impressions” (Sa. *samskāras*). Our goal, however, is to create a well-established approach, where the mind gets automatically absorbed into the “meditation object” (Sa. *ekāgra mindset*). As we cannot use our logical way of operation here, we have to bend upon on our strong belief coming from nearly all spiritual traditions, that we are also members of a dimensional hierarchy where patrons, angels or other higher beings are willing to react to our request to help us. Thus, we are also going to use their help to resolve our karmic boundaries that disable us to experience a higher state of mind without tamastic adhesives.

At this point, we have to make a clear difference between a sankalpa and willpower. While the former is more related to an intention, which can be handled as an asynchronous request where one doesn’t expect an instant response from the recipient (i.e., a deity living at a higher reality) allowing one to relax from the outcome of the process. The latter, however, bounds and leaves one unsatisfied until the result arrives.

Another key aspect of yoga sādhanā is to get detached from the results of our actions. One of the most efficient ways to do this is to offer the “fruits of our actions” (Sa. *karma phala*) to a higher cause or, in our case, a deity. This simple attitude carries various advantages. Firstly, we relax from our expectations even more, thus our sankalpa will be indeed an intention and not a mundane will. Secondly, we give forward something for our chosen deity for the help they give us. Lastly, due to the non-dual nature of “pure consciousness” (Sa. *Chit*), anything we give forward will get back to us multiplied. If we carefully analyze the nature of this aforementioned process between sankalpa and offer it creates a loop between the native and the deity enabling a continuous resonance between them. Additionally, the separation between the native and deity is only illusionary due to the karmic bondages and limiting powers, the loop takes place within me.

3.1 Preparation and Protection

As human beings, we are continuously affected by our environment, which challenge and test us via a wide range of circumstances we experience in our waking and sleeping states. When one doesn't have enough power to handle properly a given challenge (e.g., the reaction is emotional) the imprint of such an event will be recorded at the deeper layers of the mind (subconscious/ unconscious). This "imprint" or *samskāra* is a vibration that one resonated with due to one's false identification with the mind or body. Until this vibration is demodulated and purified from one's energy system, one has to face the karmic consequences later on potentially in a more elaborate way.

Each of us comes with certain personality traits that shape our way of thinking, "knowledge" (Sa. *jñāna*), "desires" (Sa. *icchā*), and "actions" (Sa. *kriyā*). However, problems arise when these personality traits represented by the distribution of different tattvas are unbalanced and our very attributes are over or underused compared to their normal setups. As mentioned earlier the reason for this lies in the fact that our energy system represented by the purity of our *nādis* are conditioned either by our healthy personality or by our environment. The model of Human Design Systems (Ra Uru Hu 2019) mentions *nādis* that may or may not contain "life force" (Sa. *prāna*) by design. When there is a full *prānic* flow in a given *nādi*, then *prāna* is consistently emanating out and no environmental influence can affect the practitioner here. However, if a *nādi* lacks *prāna* by design, then it exists as a conduit that is to be conditioned by the environment. The problem comes when one resonates with an influence contaminated by the vibration of different talas [3]. Such influences bring long-term toxicity into one's energy system resulting in, for example, depression, emotional imbalances, diseases and so on. Remedies that handle these problems superficially (e.g., medication) cannot unbound these blockages and only serve as ephemeral painkillers and patches.

For this reason, it is highly recommended to start one's meditation with proper preparations and protection that serve as a shield against such malefic influences at least for the span of one's practice. Each vibration is a power owned and emitted by a given entity. In the practice of Śrī Chakra Sādhana as shown in Timčák (2022, 98–152), we use the power of various mantras as well as the contributions of corresponding patrons to neutralize these influences. Others, use the projective power of the Ten Mahāvidyās to protect directions

against miscreants. A simple, but efficient approach is to "sit into" the energy system of Śrī Yantra that either guarantees all the protections due to the guardian principles embedded into it or into the harmonizing vibrations emitted from its nine levels (Timčák 2017, 16–17). The most efficient way to achieve this is to articulate a *sankalpa* addressed towards a competent deity (e.g., Tripura Sundari, Paramākaśarūpi) to build such a shield around one as well as offer the fruits of this protection to Her/Him as suggested above. This way, one is in safe, and a sound environment is created during meditation without blocking karmic influences.

3.2 Sankalpa, Mantra, and the Problem of Breath Synchronization

Sankalpa is a mental process, where a wish or goal is defined using only positive description. It should be short and during the mental repetition one could make the embedding more intensive through visualization of the said aim. It is a tool where the unconscious part of the mind accepts the resolution of the person and helps one to achieve the said aim. In modern connotation *sankalpa* was described by Swami Satyananda (2013, 70).

In the following step, it's worth preparing the mind with a *kriyā* (e.g., "microcosmic orbiting" as given by Lu 1973, 36), or *mantra*, before moving forward with more elaborated practices. As in our approach one's properly chosen deity has full control over one's "sense of reality" (Sa. *jāgrat*), they can exactly read and write information that one experiences correspondingly. However, one of the key problems with *mantra* is that it may create a mist in the mind so the *sādhakas* lose the connection with their environment, which typically ends up in the lack of grounding. What we have to clearly understand is that it is not the *mantra* itself that counts at the end of the day, but the vibration it creates.

Also, in practices suggested by, for example, Gheranda Rishi (Gheranda 2012, 401) *mantra* is repeated in synchronization with inhalation and exhalation. However, the length of different mantras varies and may make these practices difficult to follow specially if the *sādhaka* is requested to keep the very same iteration loop along breath cycles. Additionally, the "intellect" (Sa. *buddhi*) is not self-illuminated, so it cannot focus on multiple things at a time so it will flicker the focus on the *mantra*, the counting of the *mantra* and the breath. This may bring advantageous results and turn off the mind for a while,

but most of the time the breath will not be natural carrying the risk of prāna residuals appearing in the system to take place. A proper sankalpa could, however, help here as well.

Similarly, to our vegetative nervous system, operating systems do many tasks in the background that we are not conscious about as an end user. It is not only the operating system, but users can also instrument a process to run in the background [4], allowing them work on another job simultaneously in the very same terminal. This way, one can ask one's deity with the proper sankalpa and offer to run a mantra in the background in order to enjoy its reflected vibration. At this point, one's only job is to relax one's attention on one's breath, which will be aligned automatically with the corresponding vibration. The reason for this lies in the fact that breathing and mind are the two branches of the very same tree. If the mind resonates with a vibration, the breath will reflect it. After some time, *kumbhaka* (Sa. "breath retention") will also take place automatically, without enforcing it.

This practice took advantage from the combined application of sankalpa and offer to create a loop between the native and deity as well as the concept of background processes.

3.3 Sankalpa to Schedule Events

During meditation one can easily slip into unexpected states of mind and there is no easy way out unless one formulates a sankalpa before to bring one back after a given period of time. One such a sankalpa could be to run our personal mantra for 108 times for ten minutes only. The advantages of this approach are multifold. First and foremost, one can frame one's practice by time, secondly, one doesn't need to put extra effort to keep a counter in mind or use a mala. Lastly, one's mind gets automatically focused into the "dhāranā practice without any worldly effort" (Sa. *kriyā śakti*).

3.4 Sankalpa as an Automation Tool

Another great area for the application of sankalpas is to let the mind absorb into different states consecutively for a short period of time in order to "warm up" the corresponding mental centers and prepare the person for meditation. One such an example is when in a dualistic approach, one asks one's chosen higher deity to help one automatically vis-

its the petals of a chakra in order to let the mind absorbed in the states represented by them for a while. A great test is to use the six petals of the manas chakra (Woodroffe 2017, 55) where each petal corresponds to a binary state helping the mind to turn on and off the *five indriyas* and the "dream state" (Sa. *svapna*) for a given native.

This technique is especially useful for *ānavopāya dhāranā* [5] practices when consciousness uses an object, so the practice itself takes place at the level of objective consciousness. As mentioned earlier, one such an object can be a mantra or a sequence of syllables. For example, the Dhāranā 7 (verse thirty) of Vijñānabhairava (2022, 27–28) can be automated in a way that the twelve consecutively higher energy centers (i.e., Janmāgra, Mūla, Kandha, Nābhī, Hrd, Kantha, Tālu, Bhrūmadya, Lalāta, Brahmarandra, Śakti, Vyāpinī) absorb the vibration of the corresponding vowels (i.e., *a, ā, i, ī, u, ū, e, ai, o, au, am, ah*) one by one by means of a corresponding sankalpa in a way that each center start resonating with its syllable and the shift to a subtler, *spanda-mānatā* (Sa. "vibration, pulse") state will emerge smoothly. "This vibration allows for piercing all the constituents of the subtle body and an up-and-down movement of supreme Energy starts flowing in the *sushumna nādi*," according to the *Netra Tantra* (7:10, quoted in Bäumer 2021, 57).

After a while, this movement automatically ceases, and one enters a subtle, firm state, which is followed by the state of *all-pervading Śiva* called "parā" where the "mind dissolves" (Sa. *cittapralaya*). From this highest state of ascent, one should descend to the *hrdayam* (Sa. "spiritual Heart") to fill it with supreme Energy as described in more details in the chapter 6.

3.5 Sankalpa to Leave

A key aspect of meditation when the mind enters an undifferentiated state, for example, by merging the mind into the vibration of Ōm. If properly executed, the mind totally gets absorbed into Ōm, where the observer the observation process and the observed are identical and cannot be separated. As a consequence, there is no "personal I" (Sa. traces of *asmitā*) that could navigate back the native to its original dimensions. However, a properly formulated sankalpa can also help by using the timing method mentioned in 3.3. This way, one can safely enjoy the advantages of the Ōm vibration without the fear of total dissolution.

3.6 Sankalpa to Create a New Reality

A more advanced approach is when one's karmic traces do not allow one to perform a proper meditation due to blocks in one's energy system. A shortcut could be to ask one's patron principle to create a nested reality where the *jiva* is free from these karmic traces thus entering into a higher state of mind can automatically occur. This way even the highest state of *samādhi* can be worked out. If, for some reason, this request cannot be accomplished one can still ask one's chosen deity to emulate this state as if it was a nested reality. For us, *jivas*, it doesn't really count what type of reality is compiled as every experience is simply a specific distribution of tattwas, however, the consciousness due to its solar nature is totally unbound from such lunar experiences. The key is to experience a higher reality, because any such experience help one remember one's real origin, which merges all the created dualistic perceptions into unity.

A key consideration here is to use timing (e.g., a give time-span or deadline) to destroy this emulated reality and integrate the experiences into the native living on the original loka. Another important aspect is to keep the energy system rooted in its initial dimension otherwise the mind "disconnects" from its origin, which is the exact reason why we are in *samsāra* now.

3.7 Sankalpa of Devotion

While the previous examples were logically built constructions, we should never forget that our consciousness is so powerful, because it is so tiny that nothing can capture it. Human love is "attachment" (Sa. *rāga*) filled with expectations while "pure love" (Sa. *prem*) is also the will for eternal sacrifice. When love totally gets absorbed into the highest Consciousness, they unite by merging into a state that can be described as *Sat-Chit-Ānanda*. As within the limits of our individual consciousness we cannot love the higher/Absolute consciousness the way It loves us, the sankalpa to help us love in a way as It loves us, could also bring a leap in our *sādhana*.

4 Vulnerability Assessment Using "I"

Until now, we suggested a step-by-step approach using sankalpa and offered it to purify our energy system via different dhāranā practices. However, to keep up with the recent advances in computer science that heavily builds upon Artificial Intelligence (AI) [6] either to build code (GitHub Copilot 2021) or assess it [7], it is worth testing whether a similar scheme could also be utilized in our *sādhana*. In chapter 3.1, we mentioned that use of Srī Yantra to build up a shield for us during meditation. While this scheme is efficient for our meditation, it is more like a firewall rather than a fix for our karmic weaknesses.

If we continue drawing similarities between the nature of software and our energy systems, we find out that a bug-free code is something that behaves in all the cases according to its job description. If an application is formally verified to be correct, then no malefic instrumentation is feasible. Similarly, all our problems come from the contaminations of our nādis that represent the weaknesses where non-physical entities can find vulnerabilities, which they "exploit" using vibrations just like code injection attacks take place in cybersecurity.

AI-based solutions like Mayhem were designed and developed by the PPP hacker team of the Carnegie Mellon University in 2016 for DARPA's Cyber Grand Challenge to find and patch security vulnerabilities in unknown applications automatically. Mayhem, as the winner of DARPA's Challenge could also play at the hacker world championship (DEFCON CTF Finals in Las Vegas) against 14 other human teams including the team (!SpamAndHex) one of the authors of this paper also played. Though, at that time, humans could still win over the machine, Mayhem played successfully and did a really great job. In yoga, we can utilize this concept similarly. Instead of AI, we have a real Intelligence called Mahat/Buddhi. This primordial emanation of the Ultimate Reality

5 Denial of Service of the Mirrors of “I”

(Sa. *Sat-Chit-Ānanda*) gives home for all the processes and phenomena one can experience. In this scheme, our energy system is the target application to be assessed by Mahat. To achieve this, one has to formulate the sankalpas as follows.

1. Create a protection shield using the energy system of Srī Yantra in order to avoid all malefic influences resulting from karmic bondages.
2. Find all the weaknesses of the energy system and start fixing it. To do so, first the contamination caused by the injected vibration needs to be cleansed. Then the “hole” in our *kosha* system needs to be patched.
3. Once one feels that the real fix takes place, the karmic bondages get automatically resolved and the effulgence of Self start manifesting. The process is automatic from now on and the individual perception is swapped into Universal Consciousness.

One can formulate a sankalpa to timeframe the process also as mentioned earlier in chapter 3. 3.

As a final step one can also create a sankalpa to penetration test one’s energy system similarly to the method of fuzzing [8]. In this case, one asks one’s chosen deity to generate events (e.g., critical decisions, love, hatred) and run these vibrations against one’s freshly fixed energy system. If there is no resonance with these tests anymore, our vulnerability assessment and fixation process was successful. By keeping repeating the method suggested above, one can stabilize one’s energy system much faster and prepare it for more energy intensive experiences. Note that if karma intervenes, for example, through illness, it is feasible that a stealthy vibration (i.e., active attack) cannot be detected and resolved by a higher deity either.

All the practices we mentioned above used the reference point of individual consciousness supposing that a person needs performing actions or one’s state should be changed to achieve a higher state of realization. From another aspect, however, this assumption is false on its own as it projects the problem of salvation to an illusionary concept namely the individual consciousness assuming that we are that. In other words, by performing any action from a wrong reference point is like treating one’s shadow to prevent one’s heart attack.

Abhinavagupta (1998, 77) in *Mālinīvijaya Vārttika* gives a clear non-dualistic explanation for yoga relevant for our purpose:

Moreover, this Śāstra teaches the Yoga of Śiva thoroughly (samyag). This Yoga of Śiva is said to be non-dualistic and beyond dichotomies. Instruction in this [note: yoga] is given in this way: if [note: something] is imagined to have a certain amount of division, it is explained by analyzing it again and again.

For this is no practice (ābhyāsikī-sthitih) for entering into and remaining in the pervading Bhairava who is without duality, as both [note: entering and remaining] are completely dependent on duality.

Therefore, all the efforts made by teachers and disciples serve only to remove this inhibition caused by all the duality they are imaging.

Thus, it is essential to grasp the problem at its very root to realize everything we believed we are nothing else but false self-identification. All thoughts, desires, the energy system itself, the body, the perceptions of the gross and finest objects are merely reflections of the desires stemming from identification problems. All these objects are solely images on the mirror of consciousness and any action that we are about to perform on such reflected images will only strengthen these false imprints.

In cybersecurity, Denial of Service (DoS) attacks use various methods to render a target system, computer, or device unavailable. One of the highest threats is carried out by wipers that erase the content of devices causing huge loss of information. Interestingly, from yoga’s point of view, our goal is quite similar to that of wipers realizing that all problems come from imagined dualities as Abhinavagupta said (1998, 77). Duality is the side-effect of desires, which makes the

Ultimate Reality break into zillions of mirrors each of which projecting a bait to take actions. However, when one realizes that the one who actually takes action is nothing else but, also a reflection, it unlocks all the chains of karma, which were just as illusory as the reflection itself. Living in the world as a reflection of the Highest Will purifies the way of dharma knowing that there is nothing left to be done, still, the action of body from this point is not an action bringing *karma phala*, but a pure expression of peace and love.

5.1 Wiping Mirrors by Rejection and Expansion

More conventional approaches of removing all dualities can be either achieved by the technique of rejection like “*neti-neti*”, “*deep diving*” (Sa. *majjātā*) (Muni 1966, 8) or expansion also (e.g., cognizing that God only is).

A nice example for the category of rejection can be found in the *Nayasūtra 4* of *Nisvāsattwa Samhitā*, where Devī asks a significant question (*Niśvāsattvasamhitā* 2015, 403):

How can there be Yoga [note: meditative focus] upon Śiva, who is without support? Moreover, once the [note: yogic state called] samarasa has arisen, how can one attain Śiva-hood?

*The Lord spoke:
What may be seen by the eye, that about which it is possible to speak, those [note: thoughts] which the mind thinks, what the buddhi discerns, and those things which are appropriated by ahamkāra and whatever has form – where ever [note: all these] are not [note: to be found], there He [note: Śiva] should be sought [note: while remaining] in one’s own body. [Note: This one should do] in whichever place one is, and whichever walk of life one is attached to.*

The attitude of expansion in Ksemarāja’s commentary on the verse eighteen of *Śiva Sūtras* comes as a huge help (Vasugupta 2012, 169):

If leaving the world with its expanse of phenomena acceptable and rejectable, straw, leaf, stone, together with the mobile and immobile existents, right from Śiva down to earth accompanied by positive and negative entities, one meditates over all as Śiva, one will not have to undergo birth again.

Another key attitude here is to realize that nothing (e.g., body, mind, feeling of I am, suffering, happiness, external possessions) belongs indeed to the person, however, any empirical experience is the expression of God, the expression of Self. It is essential to demodulate both the sense of limited I and its corresponding “contaminations” (i.e., *sthūla, sūkshma*, and *para-mala*) [9] in the *sādhana*. Suffering comes from the attachment to pain, which is projected on the mirror of time. However, when one realizes that these bondages were never a possession owned by one, a realization of higher consciousness takes place. Simultaneously with the *neti-neti* approach of negation it is essential to nurture the positive attitude of expansion and stating that as I am (Śiva), everything is mine. This duel of attitudes will help overcome all the dualities stem even from the concept of nothingness and oneness as the metaphysical category called *anuttara* (Sa. “Absolute”), the state of *turiya* is beyond subject and object. Nisargadatta Maharaj (1981, 204) explains the right attitude as follows: “*Love says: ‘I am everything.’ Wisdom says: ‘I am nothing.’ Between the two my life flows.*”

5.2 Desynchronisation Attack to Break Mirrors

One of the most significant questions of early philosophies is the reconciliation of the non-dual Ultimate Reality, with the different empirical experiences of individuals. They, however later rejected the version of Sāṅkhya philosophy suggesting that each Purusa comes with a separate Prakṛti also. The key problem with this approach is that persons couldn’t share a universal memory and we would live in isolated realities. The *vivārta-vāda theory* of Advaita Vedānta teaches that all dichotomies are illusory, and Brahman is the only reality. Although, from the subjective (in reality subjective-objective) point of view of persons (Sa. *nara*) these limitations, isolations, and experiences seem to be real. A more elaborated explanation comes from Abhinavagupta’s commentary on the verse five of *Parātrīshikā Tantra* (Abhinavagupta 2017, 8):

She (the Supreme vāk) is, in the most initial stage, stationed in the Divine I-consciousness which is the highest mantra, and which is not limited by space or time. In that stage she (parā-vāk) abides without any distinction of question and answer which will start in pashyanti. The parāvāk which is non-dual i.e., identical with the (supreme) consciousness is present in all experiences always in her integral nature (of knowership and doership) uniformly in

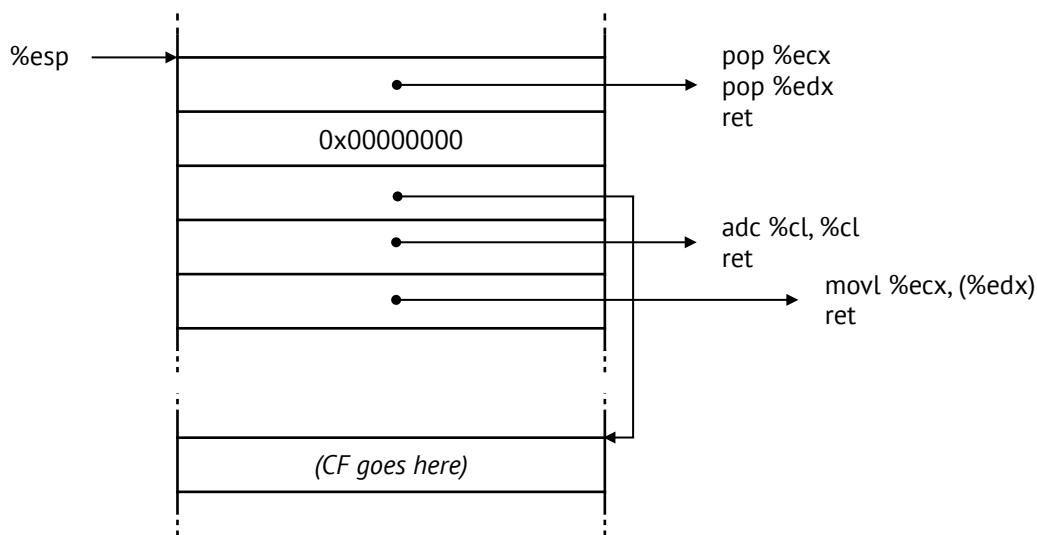


Figure 1. Return-Oriented code comprising references to various gadgets. Each gadget ends with a *ret* instruction (Roemer *et al.* 2012, 18).

all states i.e., even at the level of pashyanti, madhyamā and vaikhari.

The “six limiting forces” (Sa. *sat kañcukās*) [10] are “vibrations”, “sequence of sounds” (Sa. *vāk*) just like any other experience in the empirical world of illusionary dualities. However, such limitations work only when one “accepts” their influence, namely when one associates one’s being with the body and mind. These limitations can be imagined as security armors such as the Data Execution Prevention (DEP) of modern operating systems that denies to run code on a non-executable memory section of a given process (i.e., on an individualized tattwa distribution). It means that early exploitation techniques that insert a traditional shell code [11] into a vulnerable process to divert its control flow is not feasible any more as the injected code will not be able to run as it resides on a non-executable memory section. However, techniques such as Return-Oriented Programming (ROP) (Roemer *et al.* 2012) allows for crafting a shell code indirectly from a small sequence of instructions (gadgets) each of which ends with a *ret* instruction as Figure 1. shows it. This way only the reference (sequence of gadget addresses) stays on the non-executable memory section, however, the referenced gadget can be anywhere in the memory. Thus, the operating system (OS) simply returns to a consecutive address and executes the corresponding gadget. As the last instruction of each gadget is also a return instruction the execution goes

back to the original shell code of gadget addresses upon completing a gadget and the OS pops the next gadget to be dereferenced. This way a complete shell code can be crafted. One of most essential advantages of crafting a ROP chain is that one needs to look for only *ret* instructions (C3 byte) in the memory no matter where it is. This is especially useful on architectures with variable-length instructions (e.g., CISC) where the desynchronization of instructions can easily take place (Yellowbyte 2018). Thus, merely the position of the instruction pointer determines whether the next consecutive byte sequence is evaluated as an instruction or data.

From yoga’s point of view the sense of individuality traps one in a “non-executable” state, which means that the “highest will” (Sa. *svadharma*) cannot be reflected in one’s life. Thus, such an empirical consciousness is determined, conditioned and not *pūrna*, not integral and not unconditioned like the *khecari state* (Sa. “Universal Consciousness”). In other words, the veil of *māyā* is strong enough to reflect one’s nature perfectly.

What one can do, however, is to articulate a *sankalpa* asking one’s chosen deity to resonate the pair of syllables like “ka” (*Prthivi*) and “ksa” (*Śakti*), which are identical in reality being one of them is the “original source” (Sa. *bimba*) and the other one is its “reflection” (Sa. *pratibimba*) as Figure 2. shows it. This seemingly pair of opposites are in real identities help

demodulate the illusionary perception of dichotomies allowing for executing code on a plane that was originally believed to be non-executable.

This aforementioned approach is more a general aid to help overcome dualities, however, when there is a specific bondage (e.g., illness, pain in the back) is identified one can utilize the concept of ROP as a remedy as follows:

1. One should nurture a strong belief that the specific bondage no matter where it takes place doesn't belong to one.
2. Realize that in real there is no duality so whatever offer one articulates towards a given deity (i.e., a higher realization of I) is reflected back amplified to one presiding on the original loka.
3. As one (i.e., limited subject) just like one's all empirical experiences are reflection of mantras (i.e., *vāk*) emanating from a higher level (i.e., *parā*), the bondage is also a reflection. Thus, if one offers the sequence of impressions [12] to one's chosen deity, it will be automatically injected back (i.e., return instruction) as an impression that negates the next one. What happens is that the reflection (i.e., bondage) when offered, the deity will send it back to one, however, this original reflection will be reflected once again negating the reflection itself. For example, if the original atomic impression was a problem related to the "water tattwa" (Sa. *Jala*), and the corresponding syllable "kha" was offered, the deity will play back this very same syllable. However, due to the reflected nature of the lower *loka*, this syllable will arrive as its reflected counterpart, which is "ha"

(Sa. *Sadāśiva*). As all this takes place in time for one, the injection of "ha" can be considered as a desynchronization attack against the *kañcukā* of *Kāla* (Sa. "time"). It means that instead of experiencing another "kha" in time, (after the first sample of "kha"), the reflected injection of "ha" will demodulate the vibration of the next "kha" syllable. This way, all the sufferings can be demodulated. The example below demonstrates the explanation above:

- original sequence of syllables would be experienced by one: "kha kha kha";
- desynchronized sequence of syllables after offer: "kha ha —".

The sign of "—" means that the following second "kha" has already been demodulated so the experience of bondage cannot take place anymore.

The technique mentioned above can be extended to the practice of *ātmavicāra* suggested by Śrī Ramana Maharshi where everything that one experiences is infused back into the *hrdayam* and can be offered completely to a chosen deity. This is basically a ROP chain comprises the sequence of syllables of the whole energy system. When this whole sequence is offered, which is basically a surrender to the Self, due to the nature of reflection everything in this sequence will be returned reflected to the original loka of the person, however, demodulates instantly the corresponding energy system entirely and it takes an end to empirical consciousness.

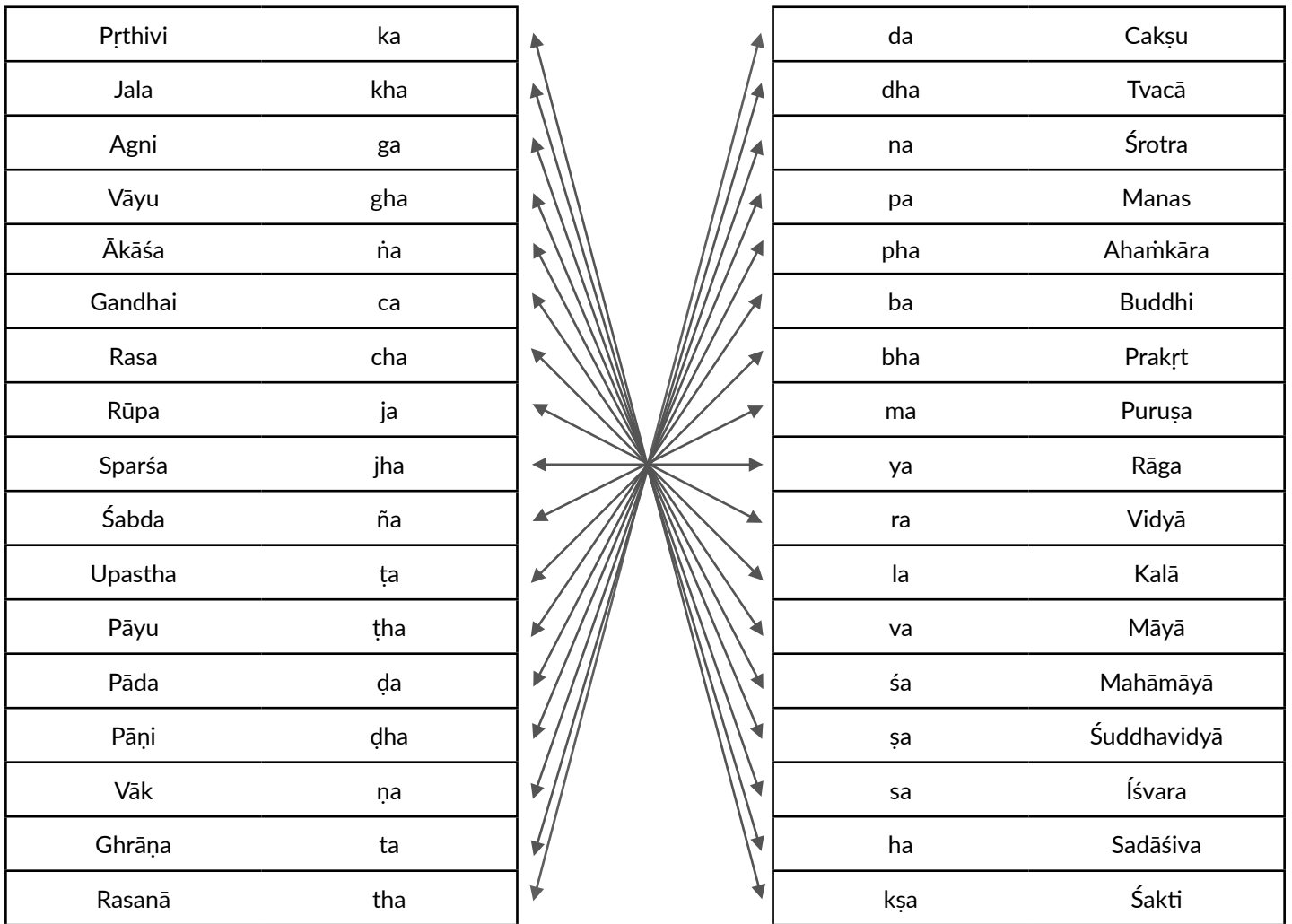


Figure 2. The Identity of the original source (Sa. *bimba*) and its reflection (Sa. *pratibimba*) based on the model of Parā-triśīka-Vivarana (Abhinavagupta 2017, 106). For the sake of clarity, straight arrows connect the corresponding tattwas. This Figure denotes 34 tattwas out of the traditional 36 principles of other Śāstras as Kāla (Sa. *limitation of time*) and Niyati (Sa. *limitation of space*) adhere to the empirical individual and are not described separately from Rāga (Sa. *limitation caused by attachment*) and Kalā (Sa. *limitation of action, creativity*) in the Trika Āgama (Abhinavagupta 2017, 102).

6 Code Injection Aided Descend

After completing the process of ignoring the mirrors of false self-identifications, which is practically the method of *neti-neti*, there is nothing else left to realize from one aspect. Still, from another point of view, there is still a step to do: descend.

According to various sages like Śrī Rāmakrisna [13], Utpaladeva [14], or Śrī Ramana Maharshi (Brunton and Venkataramiah 2013, 189) if a disciple is only able to ascend, it is a partial realization. In alchemy, this final step is called in Latin *rubedo* [15] that is the integration of the psychospiritual outcomes of the process into a coherent sense of Self before its re-entry to the world (Hamilton 2018, 125). This is the state when a person is reborn where the ego and the Self are no longer differentiated, but the body, the mind and the complete energy system are merely a tool of Self-expression. To do this, one must accept the cloak of time and space once again, although, this way these are completely purified. The identification of the Self is not confused with the cloak anymore but used as a mean to participate in the world of senses. *Netra tantra* describes this final descend to the Heart from this highest point of the Path [16].

What really happens in the background is quite similar technique to that of code injection attacks applied by various malicious actors in the cyber space. Benign applications and processes are programmed in a way to complete the tasks according to their job description. In order to modify this default behavior, adversaries inject malicious code into them in order to divert their original behavior pattern in accordance with their nefarious means. Just like code injection attacks, the process of *rubedo* etches the new personality traits into the purified energy system so as to live a life that is entirely *dharmic* (e.g., attains perfection). Although, this similarity may look a little bit farfetched at first glance, we should consider

here the pillar of equality in the philosophy of Tantra and the reflected nature of “wakening state” (Sa. *jāgrat*): “*The cāndālā (the untouchable sūdra) is symbolically worshipped as Śiva*” (Mishra 2011, 48).

When the aforementioned process is *not* completed automatically, but if one successfully realized a higher state of consciousness, a code injection *sankalpa* can still be formulated to one’s chosen deity. This way, a personality barrier burnt into one’s energy system long ago can be overridden much more efficiently. An example is when one intends to change one’s way of thinking towards a previously stereotyped behavior pattern to derail the *vāsanās* into a more uplifting track.

7 Taking Control Over Dream States

“Dream state” (Sa. *svapna*) and “deep sleep” (Sa. *susupti*) serve as a transition of one’s higher realization. While one enters and leaves these states consciously during daytime meditation it is essential to take control over them at night also, before falling asleep. This is the sole purpose of the well-known technique of *yoga nidra* (Satyananda 2013). Fully realized yogīs are established in *samādhi* independently of their states as Ramana Maharshi says in his interview with Paul Brunton and Munagala Venkataramiah (Brunton and Venkataramiah 2013, 189; referring to *Talks with Sri Ramana Maharshi* 17, 23, 226, 230):

Q: Do you go into ‘nirvikalpa samadhi’?

A: If the eyes be closed, it is ‘nirvikalpa’; if open, it is ‘savikalpa’. The ever-present state is the natural one, i.e., ‘sahaja’.

In the following, we describe a *dhāranā* that might bring advancement for one to take control over dream states also.

Levels	Metaphysical Categories	Śakti	Consciousness	Avasthā (State)	Person
<i>parātītā</i> transcendent	<i>anuttara</i> absolute	<i>ānanda</i> bliss		<i>turīya</i> fourth	beyond subject and object
<i>para</i> supreme	Śiva	<i>icchā</i> will	<i>abheda</i> non-difference	<i>susupti</i> deep sleep	<i>aham</i> I
<i>parāparā</i> intermediate	Śakti	<i>jñāna</i> cognition	<i>bhedābheda</i> difference in non-difference	<i>svapna</i> dream state	<i>tvam</i> Thou
<i>apara</i> lower	Nara	<i>kriyā</i> activity	<i>bheda</i> difference	<i>jāgrat</i> waking state	he/she/it

Table 2. Trika Correspondences as given in Bäumer (2021, 33).

7.1 Manas Chakra Dhāranā

Woodroffe mentions a secret minor chakra called *manas* (Woodroffe 2017, 56). This chakra is located above *ājñā* and comprises six petals (*sabda-jñāna*, *sparsa-jñāna*, *rūpa-jñāna*, *āghranopalabhi*, *rasopabhoga*, and *svapna*), i.e., the faculties of hearing, touch, sight, smell, taste, and sleep, or the absence of these. Thus, these faculties are switches than can be simply activated and deactivated not only by empirical means and the urges of the senses, however, by one's "awareness" (Sa. *jñāna śakti*, *śāktopaya*). In this chapter, we suggest a *dhāranā* that allows one to intervene into the natural rhythm of the process of falling asleep to stay alert meanwhile transiting into and persisting in "dream" and "deep sleep" states (Sa. *svapna*, *susupti*). As Table 2. shows it, these states are corresponding to the *parāparā* and *parā* levels of meditation. However, when one falls asleep the veil of *māyā* (more precisely its *niyati śakti*), one of the limiting forces, traps one in ignorance concealing one's real nature [17]. Ksemarāja in his commentary on *Spandakārikās* (see *Spanda-nirṇaya*) writes that a yogi who is "established in his divine nature sees both in the waking and dream states what he will to see. This is not possible for the common people" (Vasugupta 2014, 135).

The memory management of recent operating systems (Russinovich 2012; Willems 2011) work quite similarly to the process mentioned above. In a nutshell, when certain

memory ranges of running processes are not actively used, the operating systems swaps these ranges to a persistent storage (e.g., hard disk) so the free space in the memory can be reallocated to other processes. These ranges are restored once they are referenced again. The senses are withdrawn similarly to that when falling asleep and it is up to the "highest will" (Sa. *icchā*) when the physical and psychological system awakes again. However, the very state of being awake or in dream state is flagged and controlled by the *svapna petal* of the *manas chakra*. Thus, when one relaxes one's attention on that specific energy center when going into bed, there is a subtle moment when the "transition" from one state to the other occurs. The one-pointed awareness on this area allows for bringing forth the throb (Sa. *spanda*) that manages this functionality. If one acquired enough power to stay alert here and can relax one's attention from this power, the transition to dream state occurs smoothly while one remains alert. The first sign of one's success when breathing changes to flow on both nostrils, which corresponds to the activity of *ākāśa tattva* that is a prerequisite of *dhyāna*. From this point on, one can continue this relaxation process from every experience using the technique of "deep diving" (Sa. *majjatā*) or *ātma-vicāra* (Muni 1966, 8) for example.

7.2 Using Callback Functions

The success of manas chakra dhāranā depends on many circumstances including one's attention power, however, as a safety option one can formulate a sankalpa towards one's chosen deity to wake one up if slips into dreaming without awareness. This is basically equals to the registration of a so-called callback function that is well-known technique in software engineering. A callback function is a reference to an executable code that is passed as an argument to another piece of code. In our case, the callback function is the signal to stay alert that is to be executed when throb of falling asleep arrives.

8 Conclusion

In this paper, we suggested a variety of dhāranā practices for *sādhakas* fitting the metaphysical positions of “difference” (Sa. *bhedā*), “difference in non-difference” (Sa. *bheadābheda*), and “non-difference” (Sa. *abheda*). We highlighted some key similarities between these techniques and certain elements of software engineering with a special emphasis on cybersecurity so as to help practitioners with such technical background. The described *sādhanā* protocols underwent a series of preliminary tests that indicated, that in case of a cultivated *sādhaka*, they work very effectively. Naturally, their tests will continue, and the results will be reported in the future. Hopefully, this contribution clarified also some of the aspects of well-known dhāranā techniques as well as highlighted new perspectives on them to advance both in their understanding and in the spiritual practices themselves.

Notes

- [1] Actually, they are non-existent objects in a self-reflecting mirror (Sa. *pratibimba*) according to the Trika philosophy.
- [2] As Kallata says “*prāk samvit prāne parinatā*” that is translated to “*consciousness is at first transformed into vital energy*” (Bäumer 2021, 29).
- [3] Talas are underworlds namely *atala*, *vitala*, *sutala*, *tala-tala*, *rasatala*, *mahatala*, and *patala* that project tattvic contaminations through *tala chakras* situated down from the hip (Sa. *atala*) to the sole and toes (Sa. *patala*) if we resonate with their tests.
- [4] In Unix environments a new background process can be launched with the `&` character, while the CTRL+Z shortcut puts an already running foreground process into the background.
- [5] *Ānāvopāya* is the combination of *ānava* and *upaya*, which is a lower type of practice as an objective help is used mainly to “calm down the mind” (Sa. *cittaviśrānti*). At this stage, the process takes place at the level of individual consciousness. When one uses only one's consciousness or attention, the practice is called *śaktopāya* (Sa. *cittasambodha* – “awakening the mind”), which is a subtler process. If Supreme Energy arisen in the *sushumna nādi* piercing all dualities the process is called *sāmbhavo-pāya*, in which the “mind dissolves” (Sa. *cittapralaya*).
- [6] “I” in the heading is a double-edged word: it refers to “Intelligence” (Sa. *Mahat*) as a parallel expression with the Artificial Intelligence (AI) used more and more frequently today. Due to non-dualism this Intelligence is the emanation of the Self (“I”).
- [7] DARPA's Cyber Grand Challenge winner Mayhem from the Carnegie Mellon university: forallsecure.com.
- [8] Fuzzing uses a wide variety of inputs for an application to check if it breaks under given circumstances.

- [9] “Gross” or *sthūla mala* relates to *one’s actions* (Sa. *kāma-mala*) that imprints the fruits of pleasure and pain into one’s energy system. *Māyīya-mala* is the contamination of the subtle sense of *avidyā*, which creates distinction in one’s mind. When one, for example, says that this house is mine and this car is yours. The finest *mala* is the *ānava-mala*, which is one’s specific contamination, when one is unable to maintain the nearest state to Śiva, which one has already achieved (Abhinavagupta 2017).
- [10] *Niyati* – “limitation of space”; *Kāla* – “limitation of time”; *Rāga* – “limitation of attachment”; *Vidyā* – “limitation of knowledge”; *Kalā* – “limitation of action, creativity”; *Māyā* – “illusion of individual consciousness”.
- [11] A shell code is a short sequence of low-level instructions to spawn a shell that allows for adversaries to run arbitrary commands on behalf of the exploited process on a target system.
- [12] It can be considered as the ROP shell code comprising memory addresses to be dereferenced.
- [13] “Śiva has two states of mind. First, the state of *samādhi*, when He is transfixed in the Great Yoga. He is then *Ātmārāma*, satisfied in the Self. Second, the state when He descends from *samādhi* and keeps a trace of ego. Then He dances about, chanting, ‘*Rāma, Rāma!*’” (Gupta 1942, 382).
- [14] Ascent and descent can also be paraphrased by the following interpretation from Swami Lakshman Joo’s on the verse eighteen of chapter three of Utpaladeva’s Śivastotrāvalī (Utpaladeva 2008, 59–60):
If you say: He exists, it means you reject His non-existent nature. But Lord Śiva according to Kashmir Śaivism is both existent and non-existent because of the complete embodiment of Lord Śiva, as He is complete as well as incomplete. The one who is only complete and not incomplete, is not complete; he is incomplete because the state of incompleteness is not there. When incompleteness and completeness both exist; that is the complete state; that is the full state. That is Mahāsat. You are above this existent and non-existent. That is why You are both existing as well as non-existing.
- [15] *Rubedo* is the final process of the *magnum opus* meaning *reddening, purpling, or iosis*. Previous steps include *nigredo* (Lat. “spiritual death”), *albedo* (Lat. “purification”), and *citrinitas* (Lat. “awakening”).
- [16] See Bäumer (2021, 57, 153, 169):
Again, by the same path, filling the heart (with energy) – punarāpūrya tenaiva mārgena hṛdayāntaram,

by merely entering into it he should meditate upon the elixir obtained (therein) – dhyāyellabdham rasāyanam.

Having attained the experience of repose – viśrāmānubhavam prāpya, and from that full satisfaction found in the Heart, another action starts spontaneously: From the fullness of the elixir filling the Heart the yogī moves from interiorization to pouring out the blissful nectar everywhere – sarvam tadamrtam vegāt-sarvatraiva virecayet.
- [17] The “mastery over dream state” is called *svapna-svāntantrya*, which means that one dreams only whatever one wishes to dream according to one’s choice and not according to the choice of the *niyati śakti* of Lord Śiva. When one remains aware in “deep sleep” (Sa. *susupti*) state also, this “awareness” is called *vijnānakala* (Lakshman Joo 2008, 63).

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