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Three Senses of Atomic Accumulation—An Interpretation of Vasubandhu's *Viṃśikā* Stanzas 12–13 in Light of the *Abhidharmakośabhāṣya* and Dharmapāla's *Dasheng Guangbailun Shilun*

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Abstract Vasubandhu's *Twenty Stanzas (Viṃśikā)* is among the most influential anti-Realist philosophical treatises in the history of Indian Buddhism. In particular, his refutation of the theories about the accumulation of atoms (*paramāṇu*) in stanza 12 if often regarded as compelling or even conclusive. But if this is the case, then the transition from stanza 12 to 13 would seem very odd, because in stanza 13 Vasubandhu bothers himself with yet another version of atomic accumulation. In this paper, I give an interpretation of stanzas 12–13 by drawing clues from the *Abhidharmakośabhāṣya* and Dharmapāla's *Dasheng guangbailun shilun* (Taishō 1571). I argue that Vasubandhu's refutation in stanza 12 is valid only if we assume that the only possible way atoms can accumulate is by means of physical contacts with neighboring atoms. Conversely, if the opponents do not accept this assumption, then Vasubandhu's refutation would miss its target. Given that stanza 13 cites the theory of the Kāśmīravaibhāṣikas and seeks to refute it, we must interpret that the Kāśmīravaibhāṣikas hold that atoms can form an accumulation in which atoms do not come into physical contact with each other, because this would be the only way to deal with the challenge previously posed in stanza 12. Dharmapāla provides more details about this theory and seeks to refute it again. Assuming the same Vasubandhu to be the author of *Abhidharmakośabhāṣya*, in which the author deals with the same issue, we must judge that Vasubandhu himself is quite aware of the limitations of his refutation in stanza 12, and this explains why he feels the need to devote stanza 13 to further refuting the theory of the Kāśmīravaibhāṣikas. However, I also argue that Vasubandhu's refutation of this theory fails. If my argument holds, then we must conclude that the refutation of the accumulation of atoms in the

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Twenty Stanzas may not be successful. This explains, at least in part, why Dignāga feels the need to find new arguments in his *Ālambanaparīkṣā*.

Introduction

The theory of atoms, and in particular the theory about the accumulation of atoms, is crucial in the debates between realists and anti-realists in Indian philosophy, mainly because both the Buddhist (such as the Sarvāstivāda and the Sautrāntika) and non-Buddhist (such as the Vaiśeṣika) realists claim that atoms are the basic elements constituting external reality. For this reason, refutation of external reality from the anti-realist point of view (mainly the Yogācāra thinkers) boils down to the refutation of the theory of atoms. This paper focuses on the anti-realist arguments provided by Yogācāra thinkers, mainly Vasubandhu (ca. late fourth-early fifth century) and Dharmapāla (ca. sixth century). My main goal is to draw attention to the transition from stanza 12 to stanza 13 in Vasubandhu's refutation of atoms in his *Viṃśikā*[1] ("Twenty Stanzas," henceforth abbreviated as Viṃ), revealing its hidden premise and possible weakness. To support my interpretation of Viṃ, I shall draw evidence from Vasubandhu's *Abhidharmakośabhāṣya* ("Commentary on the *Treasury of Metaphysics* (*Abhidharmakośa)*," henceforth abbreviated as AKBh)[2] and Dharmapāla's *Dasheng guangbailun shilun* 大乘廣百論釋論 ("Commentary on the *Catuḥśataka* of the Mahāyāna," T 1571, henceforth abbreviated as DGS).

According to Indian realists, an atom has two main characteristics:[3] it is too small to be perceived by ordinary sense organs and its essential attributes (*xiang* 相; *lakṣaṇa*) do not change.[4] Although the term "atom" (*paramāṇu*) suggests the sense of "a very small or smallest thing," atomists may not universally agree that atoms evince no

[1] I follow Kano Kazuo in reconstructing the title of Vasubandhu's "Twenty Stanzas" as *Viṃśikā* instead of *Viṃśatikā*. Cf. Kano (2008, p. 345) in particular.

[2] As far as I know, nowadays almost all scholars agree that the same Vasubandhu wrote both AKBh and Viṃ. For example, following Erich Frauwallner, Lambert Schmithausen claims that Viṃ and AKBh were composed by the same younger Vasubandhu. See Schmithausen (1987, pp. 262–263, note 101). My discussion below follows this conventional wisdom. In terms of the relative chronology between AKBh and Viṃ, I tend to believe that AKBh predates Viṃ. One reason relevant to this paper is that I think when Vasubandhu composed Viṃ, he was already aware that one can resolve his criticism in Viṃ hemistich 12ab by claiming that atoms do not contact each other in an accumulation, a point that was highlighted in AKBh. And this explains why Vasubandhu felt the need to criticize the Kāśmīravaibhāṣikas' position in Viṃ stanza 13. The assumption that the same Vasubandhu composed AKBh and then Viṃ would therefore strengthen my thesis. On the other hand, even if AKBh and Viṃ were composed by different authors, simply based on the logic of Viṃ itself, I can still make a case that the Kāśmīravaibhāṣikas hold that atoms accumulate without contacting each other. In short, my interpretation does not rely on the assumption that it was the same Vasubandhu who first composed AKBh and then Viṃ.

[3] For some general information about atoms (*paramāṇu*), see Pruden (1988–1990, pp. 184ff). and Karunadasa (1967, pp. 142ff.); for a brief discussion of the distinction between *dravya-paramāṇu* and *saṃghāta-paramāṇu*, see Karunadasa (1967, pp. 143–144).

[4] The idea that the essential attributes of atoms do not change is in most cases not explicitly proclaimed, with probably the most distinct exception being the theory of *pākaja* of the Vaiśeṣika. I thank Professor Eli Franco for drawing my attention to the theory of *pākaja*. Based on the argument in DGS 1.1 below, it is clear that both the opponents and the proponents agree that smallness and roundness, both essential attributes of atoms, do not change when atoms accumulate in one way or another. Although atoms never

spatial extension. But judging from Vasubandhu's refutation of realist theories laid out in his Viṃ, we can infer that at least one atomic theory, which Vasubandhu combats in his Viṃ, holds that atoms have no direction-parts (*dig-bhāga*) and hence no extension.[5] Herein lies the main thrust of Vasubandhu's counter-argument: It would be impossible for the realists to maintain that mere atoms could accumulate a large enough mass to constitute a condition *qua* cognitive object (*ālambana-pratyaya*), without forfeiting their commitment to the definition of atoms as being partless. Vasubandhu's refutation resounds so powerfully that all his realist opponents seem to have been defeated.[6]

But a puzzling issue remains: After refuting the atomic theory of the realists in Viṃ stanzas 11–12, why then does Vasubandhu in Viṃ stanza 13 cite the opinion of certain Kāśmīravaibhāṣikas, who, "to avoid the fault implicit in partlessness, namely, that the atoms cannot conjoin, maintain that it is the aggregations that conjoin with one another?"[7] Is it not true that, in Viṃ stanza 12, Vasubandhu has already rejected the possibility *in general* that partless atoms can accumulate to form a large aggregation? Then why would Vasubandhu go on to bother himself with refuting a *particular* theory of accumulation held by these Kāśmīravaibhāṣikas? Moreover, this specific theory of the Kāśmīravaibhāṣikas is odd: it claims that aggregations of atoms can accumulate to form an even bigger, perceptible thing, without explaining how that aggregation itself can be formed in the first place.

In addition to the oddness in Viṃ stanza 13, another lingering question is this: Why does Dignāga in his *Ālambanaparīkṣā* (henceforth abbreviated as ĀP) seem to have abandoned Vasubandhu's strategy of refutation? The linchpin of Vasubandhu's refutation is the incompatibility between partlessness and accumulation. But in ĀP, the refutation has nothing to do with extension. In ĀP, the key is that nothing can fulfill both requirements for qualifying as a condition *qua* cognitive object. Dignāga begins with the premise that to qualify as a condition *qua* cognitive object, a thing must meet two requirements at the same time: (a) being a cause (*kāraṇa*) for a cognition (i.e., having causal efficacy) and (b) bestowing its image (*tad-ābhatā*) on that cognition.[8] A mere atom cannot make a discernible causal contribution to our perception, because, even though it is substantially real (*dravya-sat*),[9] and hence capable of exerting causal efficacy, it, on its own, is incapable of bestowing any

Footnote 4 continued
change their essential attributes, they are not permanent (*nitya*). According to Buddhists they still belong to the dharma of matter (*rūpa*) and hence to conditioned dharmas (*saṃskṛta-dharmas*).

[5] The term *dig-bhāga* literally means "direction-part," meaning the parts with respect to different directions. For example, the part on the eastern side and the part on the western side. If a thing has direction-parts then that thing would have extension in space.

[6] See, for example, comments by Matthew Kapstein footnote 23 below.

[7] Quoted from Kapstein (2001, p. 198).

[8] For a Sanskrit fragment from Kamalaśīla on *Tattvasaṃgraha* stanzas 2081–2082, Cf. Tola and Dragonetti (2004, p. 12). For an English translation, cf. Tola and Dragonetti (2004, pp. 33ff).

[9] I here translate *dravya* as "substance" in contrast to *prajñapti* ("concept" or "name"). This is because *dravya* in the Sanskrit Buddhist tradition is regarded as what really exists, namely, the only entities that can have causal efficacy (*arthakriyā*). Following this choice, I translate *dravya-sat* as "substantially real" in contrast to *prajñapti-sat* as "conceptually real" or "nominally real."

image on our perception (i.e., it is invisible). Conversely, whatever we think we see —a cup, a table, etc.—are all aggregations of atoms and hence are conventional things, and therefore, they are thus themselves mental constructs and hence merely conceptually-real (*prajñapti-sat*), and therefore, by definition, evince no causal efficacy. Since things that are not substantially real cannot exert causal efficacy, aggregations of atoms cannot bestow their images on our cognition. Dignāga goes on to refute a third position[10] and conclude that no external thing can qualify as a condition *qua* cognitive object, and hence external reality is refuted. In the above précis, it is clear that the contrast between atoms "having parts" and atoms "having no parts" is never an issue for Dignāga's ĀP.

So why does Dignāga eschew Vasubandhu's strategy? Were Dignāga's opponents somehow able to escape from Vasubandhu's refutation? If not, then why would Dignāga go to such pains to compose ĀP, if Vasubandhu's Viṃ had already refuted all possible ways for atoms to accumulate? If so, then what might be the undisclosed defect in Vasubandhu's counter-argument, if any?

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This paper tries to answer the above questions by closely reading Viṃ in parallel with Vasubandhu's AKBh and Dharmapāla's DGS. Dharmapāla's DGS provides key clues shedding light on the argument of Viṃ, because it documents a number of crucial points of dispute in the controversies between contemporary Buddhist and their non-Buddhist realist opponents. I present translations of some crucial passages in DGS, in consultation with a fragmentary commentary by Wengui 文軌 (date unknown; ca. seventh century CE). Challenged by a Yogācāra thinker in an earlier text, the opponents proposed a revised theory that was targeted in an even later Yogācāra text. From this perspective, it would be very useful to investigate why atomic theories were refuted in various ways in various Buddhist texts such as AKBh, Viṃ, Sthiramati's *Triṃśikābhāṣya*, Dignāga's ĀP, Dharmapāla's DGS and, much later, Śāntarakṣita's *Tattvasaṃgraha*[11] and Kamalaśīla's commentary[12]. On the other side, Saṃghabhadra and Dharmakīrti defend the atomic doctrine.[13] A close survey of all the above texts would require separate papers or even an independent monograph. This paper has limited scope. I confine myself to attempting to show that if we read Viṃ in light of AKBh and DGS, we realize that Vasubandhu's refutation of atomic theories may be flawed, and hence not so devastating as it seems.

Before I press on, a few words on methodology are in order. My strategy in this paper is primarily philosophical rather than historical. By philosophical I mean that I try to reconstruct the original philosophical argument, namely, to recover the core notions and the arguments in such a way that the strongest possible (though not

[10] This is a somewhat mysterious theory about which no contemporary scholar seems to have a clear idea. I believe that the contrast between the second and the third target of ĀP is related to Xuanzang's distinction between *hehe* 和合 and *heji* 和集. In Xuanzang's Chinese translation of ĀP, he employs the term *heji xiang* 和集相 for the third target (T1624:31.888b21-24). I have to set this problem aside here, but hope to come back to it in a future publication.

[11] Cf. Suganuma (1964) for example.

[12] Cf. footnote 18 below.

[13] According to Eltschinger, Dharmakīrti may subscribe to the notion of atoms merely at the provisional level; see Eltschinger (2010, pp. 429–430).

necessarily flawless) arguments can be reconstructed for both the proponents and the opponents. It is a different matter whether the proponent's intended opponents in fact existed in history, or whether the position of the opponents in a philosophical text matches historical testimony. [14] In this way, I will bracket, at least for the purpose of this paper, all those indeterminate issues such as whether all realists in the history of Indian philosophy agree that atoms have no extension;[15] the minimum number and types of atoms required for constituting a molecule as a minimal stand-alone unit of reality;[16] what was at stake in the debates between Sarvāstivāda and Sautrāntika,[17] etc. My main approach will be to recover the philosophical arguments, but I also supplement this philosophical analysis with historical information where relevant.

A Set of Terms Concerning the Ways Atoms Accumulate

As will become clear in the following, a key difference among the theories of atoms refuted by Dharmapāla lies in precisely whether or not there is physical contact (*sparśa*) in an accumulation of atoms.[18] To avoid confusion, in this paper I

[14] For example, Kuiji attributes the position targeted by Vasubandhu in Viṃ stanza 12 to the Sautrāntika, but also reports that according to Sautrāntika atoms have parts. See Fascicle 2 of his *Commentary on Viṃśikā* (唯識二十論述記) (T1834:43.992c16-18) and Fascicle 2 of his *Commentary on the Cheng weishi lun (Vijñaptimātratāsiddhi)* (成唯識論述記) (T1830:43.267a28-b4).

[15] I am aware that some realists would not define an atom (*paramāṇu*) as infinitesimally small or having no extension. For example, Burke (1983, p. 273) points out that the Vaiśeṣikas define an atom as having "a measure." But if we follow the argument of Viṃ, then Vasubandhu's intended opponents must hold that atoms do not have parts (*niravayava*), namely, do not have extension. Otherwise, Vasubandhu would not be able to make the *reductio ad absurdum* argument in Viṃ hemistich 12ab. I thank Professor Dan Lusthaus for drawing my attention to Burke's paper. This same point that atoms have no extension is made clear in Dharmapāla's DGS: 既有方分便失極微, 如是極微即可分析, 應如麁物非實非常, 違汝論宗「極微無方分常住實有, 造世間萬物」(T1571:30.191a19-22); see below Section 2.2.1.1 for my English translation.

[16] This means that atoms exist in reality not individually but always as a group (molecule); for example, the theory of *rūpasaṃghāta* that concerns the infamous notion of "eight substances arise together" (*aṣṭa-dravyaka utpadyate*; 八事俱生) in AKBh. See Yoshimoto (1971, p. 331). Here *shi* 事 (*dravya*) means "substantially real entities," i.e., *paramāṇu*. A natural reading of this theory would mean that eight atoms —in whatever way they somehow form a cluster—come into existence together as the minimal unit of reality. However, regarding this theory, Sasaki points out that the minimum accumulation of atoms consists of twenty atoms. Namely, an atom of matter (*rūpa*) at the center, surrounded by one atom each of earth, water, fire and wind, constitutes the first group of five, and, in the same manner, with the atom of smell (*gandha*), taste (*rasa*), and contact (*sparśa*) at the center, each forming a group of five, to constitute a total group of twenty atoms. See Sasaki (2009). Many thanks to Professor Tōru Funayama for drawing my attention to Sasaki's paper.

[17] Cf. Dhammajoti (2012) for example.

[18] Interestingly, in Kamalaśīla's refutation of atomic doctrine in his commentary on the *Tattvasaṃgraha* (stanzas 1988–1991), the issue of whether atoms contact each other also plays a key role. There Kamalaśīla mentions three types of accumulation of atoms: (1) atoms form a connection (*saṃ-√yuj*) with one another (*parasparaṃ saṃyujyante*); (2) atoms have intervals between them and never come into contact (*sāntarā eva nityaṃ na spṛśanti*); (3) atoms do not have intervals between them, but there is the notion (*saṃjñā*) that they have contact (*nirantaratve tu spṛṣṭasaṃjñā*). It is noteworthy that Kamalaśīla also distinguishes between accumulations where atoms contact or do not contact each other. Cf. Kurihara

deliberately use the following set of terms. My definitions are valid only within the context of Viṃ and similar contexts (i.e., concerning the physical accumulation of atoms). I do not claim that the same set of terminology can also be validly applied to the context, say, of Dignāga's ĀP.

Accumulation$_1$: atoms accumulate, irrespective of whether atoms contact neighboring atoms or not. Accumulation$_2$ and Accumulation$_3$ below are sub-sets of accumulation$_1$. In Viṃ, the sense of accumulation$_1$ is carried by the term *saṃhatās* in Viṃ 11c, a past participle and hence an adjective from the Sanskrit root √*han*, meaning "struck together," "accumulated." So when Vasubandhu says *na ca te saṃhatās* (Viṃ 11c), he means that [the sense sphere (*āyatana*)] "is not those [atoms that are] accumulated" (i.e. form an accumulation$_1$, irrespective of whether atoms contact neighboring atoms or not).

Accumulation$_2$: atoms are accumulated in physical contact with neighboring atoms. This means that each individual atom forms connections (*saṃyoga*) with neighboring atoms. Such a case, which appears in Viṃ hemistich 12ab, is the following: an atom at the center forms an accumulation$_2$ via six connections with six neighboring atoms: above, below, and to the four sides.[19]

Accumulation$_3$: atoms are accumulated without physical contact with neighboring atoms. This stands in sharp contrast to accumulation$_2$. In an accumulation$_3$, there is no connection (*saṃyoga*) of each atom with neighboring atoms. In Viṃ, this is the sense carried by the word *saṃghāta* in stanza 13 (but not in stanzas 14–15). So when Vasubandhu says, *paramāṇor asaṃyogāt tatsaṃghāte 'sti kasya saḥ*, he means to say: Since there is no connection of an atom [with neighboring atoms], in an accumulation$_3$ of atoms (*tat-saṃghāte*), which [atom] does that [connection, i.e., connection between two such accumulation$_3$-s of atoms] belong to? See below for more details.

Vasubandhu's Refutation of Theories of Atoms in Stanzas 12–15: A Brief Review

Here I do not aim at a comprehensive reading of Viṃ, due to limitations of space. My brief review of Viṃ focuses on the possible defect in its argument against the realists' doctrine of atoms. Vasubandhu's refutation starts in Viṃ stanza 12. The gist is that atoms either accumulate in different places or in the same place. If they accumulate in different places, then there would be six atoms surrounding the atom

Footnote 18 continued
(1999, p. 177). Kurihara thinks the first and the third theory should be attributed to the Sarvāstivādins and to the Sautrāntikas. It is not clear to me how the first theory is to be distinguished from the third.

For a similar issue about whether two *kalāpa*s (the counterpart of *saṃghāta-paramāṇu* in AKBh) come into physical contact, see Karunadasa (Karunadasa 1967, pp. 152ff).

[19] The term *saṃyoga* comes from the Vaiśeṣika school. It means a connection between two substantially real entities (*dravya*). Hence the atom at the center forms six connections with six neighboring atoms. See, for example, two statements from the *Daśapadārthī* below: (1) "What is connection? The reaching of two [substances] which did not reach [each other before] is connection." (*kaḥ saṃyogaḥ? yāprāptayoḥ prāptiḥ sa eva saṃyogaḥ*) (Miyamoto 2007, p. 13); "Connection and separation have two substances as their locus." (*saṃyogavibhāgau dvidravyāśritau*) (Miyamoto 2007, p. 39).

at the center and hence six connections (*saṃyoga*) between the one at the center and each neighboring atom, and therefore, this would prove that the atom at the center must have six direction-parts (*dig-bhāga*). In other words, if seven atoms form an accumulation$_2$, then the one at the center must have extension. This would go against the mutually-accepted assumption that atoms have no extension. If, on the other hand, atoms accumulate in the same place, then the result of the accumulation would still converge on the size of a single atom, and hence would still remain imperceptible.

In Viṃ 13, the Kāśmīravaibhāṣikas hold the theory that it is not individual atoms that form an accumulation$_2$; rather, it is the aggregations (*saṃghāta*)[20] of atoms that form an accumulation$_2$ with neighboring aggregations. The underlying assumption here is that since these aggregations have parts, to claim that they form an accumulation$_2$ to become perceptible sense objects does not run counter to the consensus that individual atoms do not have parts.

Viṃ stanza 14 shifts the focus from the accumulation of atoms to the atom itself. There Vasubandhu proposes a dilemma about whether atoms have extension or not and then refutes both lemmas: (a) If an atom evinces extension, then it must possess direction-parts (*dig-bhāga*). But in that case, then how could that atom be strictly simple (*eka*)? (b) If, on the other hand, an atom evinces no extension, then it cannot possess eastern and western parts. But if that were the case, then our common sense experience of things like shadows would be inexplicable.

Having resolved the objection that experiential objects consist of accumulations of atoms in stanzas 12–14, Viṃ stanza 15 goes back[21] to refute the other alternative, namely, that experiential objects such as blueness are simple (*eka*). Vasubandhu's refutation runs as follows: If this were the case, then features of common sense experience would be inexplicable, such as going from here to there; grasping the foremost part of something rather than its hindmost part, the existence of separate things (elephants, horses) in different places, etc.

As shown below, Dharmapāla's DGS also reiterates some of the same arguments. But since this is not the main topic of this study, I will only render some brief comments on the relevant parts of Viṃ in my translation of DGS below.

Questions and Problems in the Transition from 12–13

Now I focus on the transition from stanza 12 to 13, because it looks odd at first sight. Let me quote the English translation of stanza 13 by Tola and Dragonetti, where the Kāśmīravaibhāṣikas claim:

> (We accept that) the atoms indeed do not become connected, because they do not have parts - (so) let it not be (attributed to us) the absurd consequence of

[20] Later in this paper, I will argue that "aggregation" (*saṃghāta*) here must be understood in terms of accumulation$_3$.

[21] I think the idea that experiential objects are simple (*eka*) refers back to Viṃ verse 11a, where the Vaiśeṣika position that the external sphere (*āyatana*) is a whole (*avayavin*) is rejected. See Tola and Dragonetti (2004, p. 98 and 109ff.).

> that logical defect - but on being conglomerated (the atoms) become connected among themselves. (Tola and Dragonetti 2004, p. 143)[22]

The above passage leaves at least three questions unanswered:

(1) How should we understand the difference between "conglomerate" and "connect" here? What does it mean to claim that, when they are "conglomerated" (*saṃhatās*) as aggregations, the atoms become connected (*saṃyujyante*)?
(2) Is it not true that in Viṃ stanza 12, Vasubandhu has already rejected the possibility *in general* that partless atoms can accumulate to form a perceptible sense object? Then why would Vasubandhu bother refuting a *particular* theory of accumulation held by these Kāśmīravaibhāṣikas? Does this mean that this position could somehow get around the refutation in stanza 12? If not, then what is the point of referring to it?
(3) Moreover, this specific theory is odd: it claims that aggregations of atoms can accumulate to form an even bigger, perceptible mass, without explaining how that aggregation itself can be formed in the first place.

To find answers to these questions, we need to go back to stanza 12, where Vasubandhu proves that the ideas of "an accumulation of atoms" and "atoms being partless" are incompatible. Vasubandhu's argument looks powerful. As Kapstein observes, "The problem posed by the first horn of the dilemma seems to me clearly to be a real difficulty."[23] However, it is the aim of this paper to show otherwise. This is because Vasubandhu's argument is devastating only if one adds an *extra* assumption: "The *only way* atoms accumulate is through physical contact with each other (i.e. to form an accumulation$_2$ where there are connections [*saṃyoga*] among atoms)." That is, when seven atoms accumulate, the atom at the center can be proven to have parts only because in each of its six direction-parts it is in physical contact with the six neighboring atoms. In contrast, suppose atoms can *somehow* accumulate without physically contacting each other (i.e. to form an accumulation$_3$ where there are no connections [*saṃyoga*] among atoms), then the one at the center would not necessarily have parts, and then Vasubandhu's refutation fails.

Kapstein seems to agree with the direction I suggest, as he comments thus on the Kāśmīravaibhāṣikas' position:

> The Vaibhāṣika theory in its developed form seems to have required unextended points of resistance, indivisible even in thought, falling within, but *not filling, given spaces*, and at the same time capable of existing only in clusters. (Kapstein 2001, p. 191; my emphasis).

Kapstein's idea that atoms do not fill a given space, though not elaborated in detail, could be taken to mean that atoms do not contact each other, because

[22] The Sanskrit text reads: *naiva hi paramāṇavaḥ saṃyujyante niravayavatvāt | mā bhūd eṣa doṣaprasaṅgaḥ | saṃhatās tu parasparaṃ saṃyujyanta iti kāśmīravaibhāṣikās* (Lévi 1925, p. 7) Kapstein's translation reads: "The Kāśmīri Vaibhāṣīkas, to avoid the fault implicit in partlessness, namely, that the atoms cannot conjoin, maintain that it is the aggregations that conjoin with one another." (Kapstein 2001, p. 198) Silk's translation reads: The Kashmiri Vaibhāṣikas say: "Atoms do not at all conjoin, because of being partless—absolutely not! But compounded things do conjoin one with another." (Silk 2016, p. 89)

[23] Kapstein (2001, pp. 189–190).

Kapstein is very clear in interpreting the Kāśmīravaibhāṣika position to mean that "the aggregations are mere collections of unconjoined atoms" (ibid.).[24]

A strong support for my interpretation comes from Vasubandhu's careful, though implicit, distinction between accumulation$_2$ and accumulation$_3$. In the case of the former, he uses words related to the Sanskrit root √*yuj* to highlight that there are connections (*saṃyoga*) among atoms. For example, the first hemistich of Viṃ 12 and Vasubandhu's auto-commentary reads:

ṣaṭkena yugapad yogāt paramāṇoḥ ṣaḍaṃśatā | (12ab)
ṣaḍbhyo digbhyaḥ ṣaḍbhiḥ paramāṇubhir yugapad yoge sati
paramāṇoḥ ṣaḍaṃśatā prāpnoti | *ekasya yo deśas*
tatrānyasyāsaṃbhavāt | (Lévi 1925, p. 7)

The basic line of thought here is that if atoms form an accumulation$_2$, then the atom at the center must have six direction-parts (*dig-bhāga*) and hence evinces extension. Hence the phrase *ṣaṭkena yugapad yogāt* should mean "because there is a connection (*saṃyoga*) with a group of six (*ṣaṭka*) at the same time" and hence the seven atoms form an accumulation$_2$. The same also holds true for the phrase *yoge sati* in the auto-commentary, which should thus mean "when/if there is a connection (*saṃyoga*) [with each of the six neighboring atoms]."

In contrast, in stanza 13, when Vasubandhu quotes the claim of Kāśmīra-vaibhāṣikas and criticizes this position, he uses the term *saṃghāta* (from the Sanskrit root √*han*, meaning "struck together" and hence "aggregation") to refer to an aggregation of atoms that has extension and hence can form an accumulation$_2$.[25]

Now if the term *saṃghāta* refers to an aggregation in which seven or more atoms form an accumulation$_2$, then this position would have already been proven wrong by stanza 12. For this reason, the term *saṃghāta* here must be understood as an aggregation where atoms form an accumulation$_3$, i.e., without any connection among atoms. This would be the only possible way the realists could get around the counter-argument in stanza 12. This would in turn explain why Vasubandhu still needs to devote stanza 13 to try to refute this position. Namely, Viṃ hemistich 12ab refutes accumulation$_2$, and stanza 13 provides the counter-argument against accumulation$_3$.

Given the contrast between accumulation$_2$ and accumulation$_3$, the adjective *saṃhatās* in verse 11c should mean "accumulated in terms of accumulation$_1$, including both accumulation$_2$ and accumulation$_3$.[26]

[24] This being said, I am still puzzled by Kapstein's discussion about whether the atoms in question are extended or unextended for Vasubandhu. It seems clear to me that Vasubandhu's refutation would not work if it is accepted that atoms are extended. But in a footnote, Kapstein comments: "Here, his [i.e., Vasubandhu's] concern was probably an earlier version which postulated conjunction, not among atoms, but among clusters of unconjoined, simple, but *extended, atoms*." (Kapstein 2001, p. 202; my emphasis) Kapstein does not explain where he adopted this idea from.

[25] The term *saṃghāta* has a history. Vasubandhu in AKBh on *Abhidharmakośa* II.22 uses the term *rūpasaṃghāta* to refer to, so to speak, a molecule, i.e., a minimal (*sarvasūkṣma*) collection of atoms. See Pradhan (1967, p. 52, line 23).

[26] In stanza 11 three options are offered: the [external] sphere (*āyatana*) (1) is simple (*ekam*); (2) is complex, atom-wise (*anekaṃ paramāṇuśaḥ*), i.e., comprises unaccumulated atoms; (3) is accumulated atoms (*saṃhatāḥ paramāṇavaḥ*).

This line of interpretation meets its only difficulty with the term *saṃhatās* in the auto-commentary to stanza 13, where Vasubandhu quotes the Kāśmīravaibhāṣīkas' opinion: *naiva hi paramāṇavaḥ saṃyujyante niravayavatvāt | mā bhūd eṣa doṣaprasaṅgaḥ | saṃhatās tu parasparaṃ saṃyujyanta iti kāśmīravaibhāṣikās*. Here I assume the term *saṃhatās* should mean "aggregated in terms of accumulation$_3$ (i.e., the meaning of *saṃghāta* in stanza 13)" rather than "aggregated in terms of accumulation$_1$ (i.e., the meaning of *saṃhatās* in stanza 11c)." This assumption finds support in the fact that in his following criticism, Vasubandhu suddenly switches back to *saṃghāta* to attack this position. Moreover, my assumption also finds strong support from the manuscript recently published by Silk, where the manuscript has *saṃghātās* instead of *saṃhatās*.[27]

Now if we follow the above distinction closely, we can achieve a coherent reading of Viṃ stanza 13. Vasubandhu begins by citing the position of the Kāśmīra-vaibhāṣikas, who claim that instead of single atoms, it is the aggregations (*saṃhata* in Lévi's edition but here read in the sense of *saṃghāta*, meaning an aggregation in terms of accumulation$_3$) that form connections (*saṃ-√yuj*) with one another:

saṃhatās tu parasparaṃ saṃyujyanta iti kāśmīravaibhāṣikās

Vasubandhu encapsulates his challenge in Viṃ stanza 13:

paramāṇor asaṃyogāt tatsaṃghāte 'sti kasya saḥ | (13ab)
saṃyoga iti vartate |
na cānavayavatvena tatsaṃyogo na sidhyati || (13cd)
atha saṃghātā apy anyonyaṃ na saṃyujyante | na tarhi
paramāṇūnāṃ niravayavatvāt saṃyogo na sidhyatīti vaktavyaṃ |
sāvayavasyāpi hi saṃghātasya saṃyogānabhyupagamāt | tasmāt paramāṇur
ekaṃ dravyaṃ na sidhyati | (Lévi 1925, p. 7)

Vasubandhu's challenge in Viṃ 13ab says: "Since there is no connection (*asaṃyogāt*) of an atom [with one another], then what does that [connection (*saṃyoga*), i.e., connection among aggregations (*saṃghāta*)] belong to in an aggregation of atoms (*tat-saṃghāte*)?" (my translation). This means that if, according to the Kāśmīravaibhāṣikas, inside each aggregation (*saṃghāta*) there is no connection (*saṃyoga*) among atoms, but each aggregation forms a connection with a neighboring aggregation (i.e., aggregations form accumulation$_2$ among themselves), then to which atom in aggregation$_a$ does the connection between aggregation$_a$ and aggregation$_b$ belong? Certainly this connection cannot belong to any atom in aggregation$_a$, because if it belonged to a certain atom in aggregation$_a$, then that atom would have to have parts, because it forms a connection with a neighboring atom in aggregation$_b$.

Vasubandhu then summarizes his further challenge in Viṃ 13cd: "And it is not the case that a connection among atoms (*tat-saṃyoga*) is not established because of partlessness (*anavayavatva*)" (my translation). This means that, against the previous challenge, the Kāśmīravaibhāṣikas rejoin by conceding: "Then [let us agree that] even though [they are] aggregations, they are not connected (*saṃyujyante*) with neighboring aggregations" (my translation). Against this rejoinder, Vasubandhu further challenges: "Then it should not be claimed (*na vaktavyam*) that a connection (*saṃyoga*) is not established due to the

[27] Silk (2016, p. 89).

partlessness (*niravayavatva*) of atoms, because even for those aggregations (*saṃghāta*), which do have parts (*sāvayava*), there is the denial of connections (*saṃyogānabhyupagama*) [among those aggregations]. Hence an atom cannot be established as a simple, substantially real entity (*ekaṃ dravyam*)" (my translation).

In this way, we achieve a coherent reading of Viṃ stanza 13 and auto-commentary by closely adhering to the distinction between accumulation$_2$ and accumulation$_3$, and reading the term *saṃghāta* here as an aggregation without connections (*saṃyoga*) among atoms (namely an aggregation in terms of accumulation$_3$). This distinction cannot be overemphasized. However, to the best of my knowledge, no modern scholar has explicitly pointed this out.[28]

Tola and Dragonetti propose that the alternative remaining after the two alternatives in stanza 12 above—atoms aggregated in physical contact with each other versus atoms that overlap—is that the Kāśmīravaibhāṣikas maintain that molecules (*saṃghāta*) as groups of atoms can form accumulation$_2$ since these molecules possess parts, as they commented:

> …the atoms do not present themselves isolated, but forming cohesive groups of seven atoms each. These groups (molecules) constitute the smallest atomic unity. In these groups one atom occupies the center and the others are joined to it "coming" from the six directions of space. These groups of seven atoms can be connected among themselves, since they possess parts. And in fact these groups connect themselves in more or less great number to build up the things that constitute the external world. (Tola and Dragonetti 2004, p. 103)

We can challenge Tola and Dragonetti's reading by asking: How could the so-called molecules be formed in the first place, given that in Viṃ 12, Vasubandhu has already blocked the two possible ways in which atoms can form an accumulation? Tola and Dragonetti do not appear to be aware of this difficulty. Similarly, Kellner and Taber (2014) do not seem to touch on this issue at all.

So far, I have answered questions (1) and (2) above, namely, the Kāśmīravaibhāṣikas originally hold that atoms form aggregations (*saṃghāta*), which then form connections (*saṃyoga*) with other neighboring aggregations. But inside each aggregation atoms do not form any connection, for otherwise, this position would have been refuted by Viṃ stanza 12.

On the other hand, it is more difficult to answer question (3) above. I will present a detailed picture of the theory of atomic accumulation held by the Kāśmīravaibhāṣikas later in this paper, after consulting AKBh and Dharmapāla's DGS

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Now turning back to Viṃ 13, I further argue that Vasubandhu's counter-argument is not successful, and hence the Kāśmīravaibhāṣikas' proposal that atoms form an accumulation$_3$ to become aggregations, and those aggregations further form an accumulation$_3$ to become a perceptible sense object, is not defeated. The argument between Vasubandhu and his opponents runs as follows:

[28] As referred to earlier, Kapstein vaguely hinted at this distinction, but did not develop it in detail. If he had, then he would not have said that "the problem posed by the first horn of the dilemma seems to me clearly to be a real difficulty." Cf. footnote 23 above.

O (opponents' view (Kāśmīravaibhāṣikas)): atoms form aggregations (*saṃghāta*) in terms of accumulation$_3$ (i.e., without connections). These aggregations further form accumulation$_2$ (i.e., with connections) among themselves.

V (Vasubandhu's counter-argument in Viṃ. 13ab): To what does that connection (*saṃyoga*) between two aggregations of atoms belong? Given that there is no connection between atoms inside an aggregation, if an aggregation forms a connection with another aggregation, this connection can be formed by *no* atom in that aggregation. For this reason, such an aggregation cannot form any connection, and hence cannot form an accumulation$_2$ with another aggregation.

O': (opponents' revised view): Then [let's agree that] those aggregations are not connected (*saṃyujyante*) with each other. That is to say, atoms form accumulation$_3$ to become aggregations, and aggregations form accumulation$_3$ to become a perceptible mass.

V' (Vasubandhu's refutation in Viṃ. 13cd and auto-commentary): In that case, then the opponents should not claim that atoms do not form connections because they have no parts, since even for aggregations that do have parts, the opponents still exempt them from forming any connection [with other aggregations].

However, the argument provided in Viṃ 13cd is invalid. I summarize Vasubandhu's argument as follows. After stanza 12, both the opponents and Vasubandhu agree that P:

P: An atom that forms a connection with a neighboring atom has parts.

Underlying the position O' "[Let us agree that] those aggregations are not connected (*saṃyujyante*) with each other" is the assumption Q:

Q: An aggregation of atoms, which has parts, does not form any connection with a neighboring aggregation.

Now Viṃ 13cd accuses the Kāśmīravaibhāṣikas of being inconsistent in holding both P and Q at the same time, but in fact P and Q are not mutually contradictory. The negation of P is:

¬P: There exists an atom that forms a connection but has no parts.

In other words, we can rewrite P as:

P: If x has no parts, then x does not form a connection.

But P does not imply R, which is the negation of Q:

R (= ¬Q): If x has parts, then x forms a connection.

Since P does not contradict Q, the Kāśmīravaibhāṣikas are not inconsistent in holding P and Q at the same time. They would be inconsistent, by contrast, if they held Q and R at the same time. So Vasubandhu here is making a false accusation.[29]

[29] I think that in Fascicle 2 of his *A Commentary on Viṃśikā*, Kuiji also commits a fallacy in his inference, as he says: 述曰: 此重顯成, 破聚無合。 汝之聚色許有方分, 亦不許相合, 返顯成立極微無合不由無方分。 若由無方分執極微無合, 聚既有方分, 聚色應有合? 此中乃有法之差別及有法差別隨一不成, 非遍是宗法, 同喻能立不成, 異喻所立不遣, 合有六過 (T1834:43.995a16-21) The

My point here is that Viṃ *does* leave room for the opponents. Viṃ 11–12 successfully refutes the claim that partless atoms can form an accumulation$_2$. But Viṃ 13 does *not* successfully refute the claim of the Kāśmīravaibhāṣikas that partless atoms can form an accumulation$_3$ to become an aggregation (*saṃghāta*), and those aggregations themselves further form an accumulation$_3$ to become a perceptible sense object. As shown below, it is precisely this revised theory from Vasubandhu's opponents that Dharmapāla aims to refute in his DGS.

Clues About Accumulation$_3$ from AKBh

As I have argued above, Vasubandhu's refutation in Viṃ 12 is valid only if we assume that accumulation$_2$ is the only way to maintain an accumulation of atoms. Now I further argue that Vasubandhu himself was keenly aware of this defect in his counter-argument in Viṃ 12, for two reasons. First, the mere fact that Vasubandhu cites the position of the Kāśmīravaibhāṣikas strongly suggests that he was aware that his counter-argument in Viṃ stanza 12 did not exhaust all possible ways that atoms could accumulate. Second, in his AKBh, Vasubandhu was already aware that one can escape from the refutation in Viṃ stanza 12 by assuming that atoms can form an accumulation$_3$.

In AKBh, Vasubandhu discusses theories of atoms in his auto-commentary on stanza I.43, where he raises the question of whether atoms physically come into contact with each other or not:

> Moreover, do atoms come into contact with each other, [or] not? The Kāśṃīra masters [claim] they do not. Why? To begin with (*tāvat*), if those substantially real entities (*dravya*) come into contact by complete overlap (*sarvātmanā*), then they would become mixed [with each other] (*miśrī-√bhū*). [But] [if they come into contact] at one point (*ekadeśa*) [only], then the unwanted consequence would follow (*pra-√sañj*) that they would be things that have parts (*sāvayava*). And yet atoms are things with no parts (*niravayava*) (my translation). [30]

Here Vasubandhu reports that, to avoid the kind of criticism voiced in Viṃ stanza 12, the Kāśmīra masters claim that atoms do not contact each other in an accumulation. In other words, as early as when he composed AKBh, Vasubandhu

Footnote 29 continued
underlined part is apparently an invalid argument claiming: "If no parts, then there is no connection (*he* 合; *saṃyoga*)" implies "If there are parts, then there are connections."

[30] The Sanskrit text reads: *kiṃ punaḥ paramāṇavaḥ spṛśanty anyonyam āhosvin na| na spṛśantīti kāśmīrakāḥ| kiṃ kāraṇam| yadi tāvat sarvātmanā spṛśeyur miśrībhaveyur dravyāṇi| athaikadeśena sāvayavāḥ prasajyeran| niravayavāś ca paramāṇavaḥ|* (Pradhan 1967, p. 32, lines 11–13). Xuanzang's Chinese translation reads: 又諸極微為相觸不? 迦濕彌羅國毘婆沙師說不相觸。所以者何? 若諸 極微遍體相觸, 即有實物體相雜過; 若觸一分成有分失, 然諸極微更無細分(T1558:29.11c4-7). Pruden's English translation reads: "The Vaibhasikas of Kasmir…say that atoms do not touch one another; (1) if atoms touch one another in their totality, things, that is to say, the different atoms, would "mix with one another," that is, they would only occupy one place; and (2) if atoms touched each other in one spot, they would thus have parts: and atoms do not have any parts." (Pruden 1988–1990, Vol. I, p. 120)

was already aware that there was a way to get around the counter-argument in Viṃ stanza 12.[31]

Regarding the accumulation of atoms, the final position of Vasubandhu in AKBh is to agree with Bhadanta:

> Bhadanta [claims] that [atoms] do not come into contact, but in terms of [the idea that there is] no gap (*nirantara*, i.e., immediate contact) [between atoms], there is the notion of [their] being in contact (*spṛṣṭa-saṃjñā*) (namely, conceptually, we also say they are in contact). [We] should follow (*eṣṭavya*) Bhadanta's interpretation. Otherwise, although there is a gap (*sāntara*) between the atoms, since this gap is zero (*śūnya*), by what means would entry (*gati*) [into each other, i.e., the idea of *miśrī-√bhū* mentioned above] be obstructed, since it is admitted that atoms are impenetrable (*sapratigha*)? [32] And since (*iti*) the aggregations are not different from the atoms, [when] those aggregations are in contact, those [atoms] themselves are in contact, just as [in the case when those aggregations] are broken (*rūpyante*[33]) [the atoms inside aggregations are not in contact]. Moreover, if a difference in direction-parts (*dig-bhāga*) is posited (*kalpyate*), then whether atoms are in contact [with one another] or not, there would be the unwanted consequence that [they] have parts. Otherwise (i.e., if atoms have no difference in direction-parts), then even if atoms are in contact, there would still be no unwanted consequence [of atoms having parts] (my translation).[34]

[31] It is interesting here to note that according to AKBh, the Kāśmīra masters were already aware of the kind of refutation in Viṃ stanza 12, and they had already come up with a way to get around it. Thus, it seems that the refutation might not have been first designed by Vasubandhu, unless we assume that Viṃ had been written before AKBh.

[32] A similar report can also be found in the *Mahāvibhāṣā*, where it is reported that according to Vasumitra and Bhadanta, atoms do not contact each other in an accumulation. See T1545:27.380a18-23 and T1545:27.684a8-11.

[33] Both Chinese translations have the sense of "being broken (變壞)" for *rūpyante*. In AKBh on *Abhidharmakośa* I. 13, it says that *rūpyate* means *bādhyate* ("be damaged, to suffer") (Pradhan 1967, p. 9, line 12). I think the sense here is that given that an aggregation is not different from the individual atoms it comprises, when an aggregation comes into contact with another aggregation, it is an individual atom that comes into contact with another atom. Likewise, when an aggregation dissolves, it is an individual atom whose link is broken with another atom.

[34] The Sanskrit text reads: *na spṛśanti nirantare tu spṛṣṭasaṃjñeti Bhadantaḥ| Bhadantamatam caiṣṭavyam| anyathā hi sāntarāṇāṃ paramāṇūnāṃ śūnyeṣu antareṣu gatiḥ kena pratibādhyeta| yataḥ sapratighā iṣyante| na ca paramāṇubhyo 'nye saṃghātā iti| ta eva te saṃghātāḥ spṛśyante yathā rūpyante| yadi ca paramāṇor digbhāgabhedaḥ kalpyate, spṛṣṭasyāspṛṣṭasya vā sāvayavatvaprasaṅgaḥ| no cet, spṛṣṭasyāpy aprasaṅgaḥ* || (Pradhan 1967, p. 33, lines 2–7). Pruden's English translation reads: "1. The Bhadanta says: "There is not, in reality, any contact. One says, metaphorically, that atoms touch one another when they are juxtaposed without interval (*nirantara*)"…This opinion is the correct one. In fact, if atoms were to allow an interval between themselves, since this interval would be empty, what would hinder the progress of atoms into this interval? For it is admitted that atoms are impenetrable. 2. Agglomerations (*saṃghāta*) are not anything other than atoms. They are the same atoms which, in a state of aggregation, are a "thing-in-contact," in the same way that they are *rūpa* (i.13). It is thus absurd to deny that atoms touch one another, and yet to admit that agglomerations touch one another. 3. If you admit spatial division to the atom, then an atom certainly has parts, whether it enters into contact or not. If you deny it, why would the atom, even if it enters into contact, have parts?" (Pruden 1988–1990, Vol. I, pp. 121–122); Xuanzang's Chinese translation reads: 然大德說: 一切極微實不相觸, 但由無間假立觸名。此大德意應可愛樂, 若異此者, 是諸極微應有間隙, 中間既空誰障其行許為有對?又離極微無和

Here the notion of "without gap" (*nirantara*) needs some clarification. "Without gap" here cannot mean "in mutual contact" because according to Bhadanta and Vasubandhu, atoms do not physically come into contact (√*spṛś*) with each other. I suggest that "without gap" here means that there is still empty space between atoms, but such empty space is so minute that no other material atom can squeeze into it (more details below in section 2.2 of DGS).

Vasubandhu's remarks here can be divided into three main points. First, this passage indicates precisely a strategy that could be used to resolve Vasubandhu's criticism in Viṃ stanza 12. Second, the passage anticipates the similar kind of criticism found in Viṃ verse 13ab, namely if an aggregation comes into contact with another aggregation, then it is an atom inside the aggregation that comes into contacts (i.e., forms a connection (*saṃyoga*)) with an atom inside another aggregation. Third, again echoing stanza 14 of Viṃ, if an atom has differentiable directions (i.e., eastern, western directions, etc.), then the atom must have parts.

Having compared Viṃ against AKBh, we must conclude that Vasubandhu himself was fully aware that his counter-argument in Viṃ stanza 12 had limitations, and I think this is precisely why he felt the need to further combat the position of the Kāśmīravaibhāṣikas in Viṃ stanza 13. It is precisely because the distinction between accumulation$_2$ and accumulation$_3$ was not properly clarified that scholars have failed to recognize the significance of the transition from Viṃ stanza 12 to stanza 13.

Further Clues from Dharmapāla's DGS

In what follows, I provide an annotated English translation of some passages from Dharmapāla's DGS that are most relevant to the issue of accumulation of atoms. My main purpose is twofold. First, I try to show that the issue of whether atoms do or do not come into contact with each other in an accumulation is a focal point of DGS. This supports my interpretation of the transition from Viṃ stanzas 12 to 13. Second, I try to give a more detailed depiction of the theory of accumulation$_3$ held by the Kāśmīravaibhāṣikas. In Viṃ, while criticizing this theory, Vasubandhu did not give us any details about it, but Dharmapāla does so in DGS.

DGS is a commentary on Āryadeva's *Catuḥśataka* by Dharmapāla, translated by Xuanzang (602-664). Tom Tillemans (2008) has provided a general introduction to the *Catuḥśataka* and its commentaries. The Chinese translation comprises ten fascicles, divided into eight chapters (corresponding to the original eight chapters of the *Catuḥśataka*[35]). One of the key features of DGS is that Dharmapāla engages with various Buddhist and non-Buddhist doctrinal positions. This text hence contains a rich vein of source material shedding light on the larger context of Indian philosophy around the sixth century. More scholarly attention should be devoted to this understudied text.

Footnote 34 continued
合色, 和合相觸即觸極微、如可變礙, 此亦應爾。又許極微若有方分, 觸與不觸皆應有分; 若無方分設許相觸, 亦無斯過 (T1558:29.11c23-29).

[35] Namely, 破常品, 破我品, 破時品, 破見品, 破根境品, 破邊執品, 破有為相品, 教誡弟子品.

In translating DGS into English, I also consult the commentary by Wengui 文軌 (ca. seventh century), which proves to be extremely helpful. Unfortunately, only a tiny part of Wengui's commentary, namely, his commentary on the first chapter, survived in Dunhuang as Pelliot Chinois 2101. It was first transcribed and included in the Taishō Tripiṭaka as No. 2800 in volume 85. Recently, images of the full fragments were made available on the website of the International Dunhuang Project.[36]

We know very little about Wengui and his career. Two fragments of his work survive, namely, his commentary on Dharmapāla's DGS and his commentary on the *Nyāyapraveśa* (No. 848 in Volume 53 of X). According to Shen, Wengui was a student of Xuanzang during his master's early career. Shen estimates that Wengui lived during 615–675.[37]

The following translation includes the key passages from the first chapter of DGS. The main point of these passages is to refute the notion of permanent (*nitya*) atoms. In the translation given below, various theories about the accumulation of atoms are fleshed out in more detail. The structure of this section is as follows:

1. First Theory about the Accumulation of Atoms (Vaiśeṣika): Accumulation$_2$
1.1. Dharmapāla's refutation
1.2. Rejoinder from the opponents
1.3. Dharmapāla's refutation of the rejoinder

2. Second Theory about the Accumulation of Atoms: Accumulation$_3$
2.1 First version: Atoms occupy different locations (Pre-AKBh Vaibhāṣika)
2.1.1. Dharmapāla's refutation
2.2. Second version: Atoms form an accumulation$_3$ (Post-AKBh Vaibhāṣika)
2.2.1. Dharmapāla's refutation
2.2.1.1. Shadows imply extension of atoms
2.2.1.2. Movement implies extension of atoms
2.2.1.3 No extension, no visibility

3. Refutation of the Notion of the Atom per se
3.1. With respect to effect
3.2. With respect to opposition

Here we see that the main distinction between the first and second theories is whether atoms come into contact with each other in an accumulation. The first theory holds that there is contact, but the second set of theories holds that there is not. This supports my interpretation that in discussions of the accumulation of atoms, a major issue is whether atoms come into contact with each other or not. The first theory cannot withstand Vasubandhu's refutation in Viṃ stanza 12, but the second can.

Moreover, according to Wengui's commentary on DGS, it is very likely that the theory targeted by DGS under section 2.2 was very similar, if not identical, to the Kāśmīravaibhāṣikas' theory targeted by Viṃ stanza 13. Hence Section 2 can be seen as Dharmapāla's bid to refute the second theory, which Viṃ does not successfully refute.

[36] http://idp.bl.uk/database/oo_scroll_h.a4d?uid=31263898010;recnum=59140;index=6 (Accessed March 25, 2019).

[37] Shen (2007, p. 15).

But interestingly, to a large extent Dharmapāla simply reiterates Vasubandhu's refutation of the claim that atoms have parts, as in Viṃ stanzas 14–15. Vasubandhu does not take this portion of the argument to target the theory of accumulation$_3$. Hence we may say that Dharmapāla re-arranges the structure of Vasubandhu's Viṃ.

My main concerns here are not how DGS differs from Viṃ, or whether DGS's presentation is satisfactory. My main goal here is simply to show that Viṃ may not have successfully refuted the theories of atoms, and to suggest that this difficulty explains, at least in part, why Dignāga adopted a strategy very different from Vasubandhu.

TEXT: DGS in Light of Wengui's Commentary

1. The First Theory of Accumulation: Accumulation$_2$

The first position, which Wengui attributes to the Vaiśeṣika school,[38] reads as follows:

1. 復次, 有執極微是常、是實。和合相助有所生成, 自體無虧而起諸果。	1. Furthermore, some [masters] hold: Atoms are permanent (*chang* 常; *nitya*) and are substantially real (*shi* 實; *dravya-sat*). In connection (*hehe* 和合; *saṃyoga*), they add power to each other and produce something. Without any detriment to their own essence (*ziti* 自體; *svabhāva*), they bring about various effects.

1.1. Dharmapāla's Refutation

1.1. 此亦不然, 義不成故。若許和合必有方分, 既有方分定是無常。	1.1. [Dharmapāla's refutation:] This also is not true, because [their] claim (*yi* 義; *artha*?) cannot be established. If one allows connections (*hehe* 和合; *saṃyoga*) [among atoms], then [one should admit that] atoms must have direction-parts (*fangfen* 方分; *dig-bhāga*). And whatever has direction-parts must be impermanent (*wuchang* 無常; *anitya*).
若言極微遍體和合、無方分者, 此亦不然。何以故?	If one claims that atoms form connections by complete overlap (*bianti* 遍體; *sarvātmanā*) [with each other], and hence lack direction-parts, [Dharmapāla's refutation:] then this is not logical, either. Why?

[38] T2800:85.799c14-17.

頌曰: 在因微、圓相 於果則非有 是故諸極微 非遍體和合(I.13)	[Āryadeva presents the following] stanza: The attributes (*xiang* 相; *lakṣaṇa*) of smallness and roundness that exist in the cause do not exist in the effect; Hence atoms do not form connections by complete overlap (I.13)
論曰: 若諸極微遍體和合, 無方分故非少分合, 是則諸微應同一處, 實果應與自因遍合, 無別處故, 應亦微、圓。	Comment: If [as the opponents claim] atoms form connections by complete overlap, then since atoms lack direction-parts, it is *not* the case that parts of the atoms only come into contact with each other (*shaofen he* 少分合) [in the accumulation]. Hence each atom [in the accumulation] should occupy the same location. The substantially real effect (*shiguo* 實果) would then be in complete overlap with its own cause, because there would be no other location [it could occupy], and then it too should be minute and round.
若爾, 應許一切 句義皆越諸根所了知境, 由見所依餘可知故。 是則違害世間自宗。	[Dharmapāla criticizes:] In that case, then you should allow that all real entities (*juyi* 句義; *padārtha*) fall beyond the scope of cognitive objects for the sense organs, because, if one perceives that the basis (*suoyi* 所依)[a] [falls beyond the scope of cognitive objects for the sense organs], then he knows that the remaining [real entities (*padārtha*) also fall beyond the scope of cognitive objects for the sense organs][b]. Therefore, [the opponents] contravene both common sense and their own thesis (*zizong* 自宗; *sva-pakṣa*?).

[a] By "basis" I think Dharmapāla refers to substantially real entities (*dravya*), i.e., atoms in this context.

[b] My translation is informed by Wengui's commentary, see T2800:85.800b1-5.

Here Dharmapāla refutes the same opponents as AKBh I.43 and Viṃ stanza 12 by way of the same argument, namely, that atoms either form an accumulation$_2$ in different locations, or accumulate via complete overlap in the same location. The unwanted consequence for the former position is that atoms would evince extension, and hence would be impermanent. The unwanted consequence for the latter position is that the cause and the effect would end up sharing the same attributes, i.e., the attributes of smallness and roundness, and the effect would remain imperceptible.

In AKBh, Vasubandhu has the Kāśmīra masters say that atoms do not come to contact with each other, because if an atom comes to contact with another by complete overlap, then the fault would follow that "substantially real entities would become mixed (*miśrī-√bhū*)"; but if an atom comes into contact with another only in part, then there would be the unwanted consequence that it would have parts (*sāvayava*).[39]

In Viṃ stanza 12, Vasubandhu subtly modifies the first part of his earlier argument: instead of saying "substantially real entities would become mixed," his

[39] See footnote 30 above.

critique says, "If atoms contact by complete overlap, then the gross sum would still end up being too small to be seen."[40]

Here in DGS, Dharmapāla basically adheres to Vasubandhu's refutation except for a few minor points. He axiomatizes a key principle implicit in the Vim: whatever has direction-parts must be impermanent. In Viṃ, Vasubandhu talks mainly about the size of the group of atoms. But Dharmapāla's DGS differs from Viṃ in that the former explicitly brings in stereotypical Vaiśeṣika notions such as "real entities" (*padārtha*).

It must be noted here that, in contrast with Vasubandhu's earlier account, Dharmapāla in DGS is at some pains to distinguish between accumulation$_2$ (first theory) and accumulation$_3$ (second set of theories), and elaborate refutations for each respectively. In Section 2 below, when Dharmapāla treats the second theory, he states explicitly that, on that theory, atoms do not come into contact with each other. For this reason, here we must interpret the Vaiśeṣika position as holding that atoms form an accumulation$_2$. Otherwise, Dharmapāla's argument would not hold.

1.2. Rejoinder from the Opponents:

Following his refutation of the first theory, Dharmapāla cites a rejoinder from his opponents:

1.2. 若言實果雖與自因遍體和合無別處所, 然由量德積集力故, 令其實果亦可得見: 謂諸實果雖無住處方分差別, 然由量德積集殊勝, 令所依實非大似大, 方分差別分明可見。	1.2. If [the opponents] claim that the substantially real effect is in complete overlap with its cause without a separate location, but due to the power of the addition of the quality (*de* 德; *guṇa*) of magnitude (*liang* 量; *parimāṇa*)[a], the substantially real effect can be visible, [then] this means that the substantially real effect is not differentiated in terms of location and direction-parts, but due to the distinctive (*shusheng* 殊勝; *viśiṣṭa*) addition of the quality of magnitude, the substantially real [entity] which [serves as its] basis (*suoyi shi* 所依實), despite not being large, seems (*si* 似) to be large, and its differentiation into direction-parts can be seen distinctly.

[a] "Magnitude" (*parimāṇa*) is one among the 24 qualities (*guṇa*) according to the Vaiśeṣika. Cf. 《勝宗十句義論》:「德句義」云何? 謂二十四德, 名「德句義」。何者名為二十四德? 一色、二味、三香、四觸、五數、六量、七別體、八合、九離、十彼體、十一此體、十二覺、十三樂、十四苦、十五欲、十六瞋、十七勤勇、十八重體、十九液體、二十潤、二十一行、二十二法、二十三非法、二十四聲。如是為「二十四德」(T2138:54.1263a1-6)

In an attempt to save their doctrine of partless atoms, the opponents further propose a theory about the addition of the quality (*de* 德; *guṇa*) of magnitude

[40] See Lévi (1925, p. 7) and Tola and Dragonetti (2004, p. 143).

(*parimāṇa*). According to the Vaiśeṣika, the images of both largeness and roundness belong to the quality of magnitude. Here I quote from the **Daśapadārthī* on the quality of magnitude:

> What is dimension? That which is smallness, largeness, shortness, longness, roundness and so on is dimension.
>
> Smallness: That whose material cause is a dyad, which is produced by the number two, has one substance [as its locus] and is the cause of the expression and cognition, namely, '[This is] small' is smallness.
>
> Largeness: That which is produced by plurality, largeness and a particular accumulation of causes, is inherent in a triad and so on, has one substance [as its locus] and is the cause of the expression and cognition, namely, '[This is] large' is largeness.
>
> Shortness: That whose material cause is a dyad, which is produced by the number two, has one substance [as its locus] and is the cause of the expression and cognition, namely, '[This is] short' is shortness.
>
> Longness: That which is produced by plurality, longness and a particular accumulation of causes, is inherent in a triad and so on, has one substance [as its locus] and is the cause of the expression and cognition '[This is] long' is longness.
>
> Roundness is of two kinds—the smallest size and the largest size.
>
> The smallest size: That which is inherent in the smallest entities [namely, atoms and mind], has one substance [as its locus] and is the cause of the expression and cognition, namely, '[This is] the smallest' is the smallest size.
>
> The largest size: That which is called 'pervadingness' and so on, is inherent in ether, time, space and self, has one substance (as its locus) and is the cause of the expression and cognition, namely, '[This is] the largest' is the largest size.[41]

That is to say: although the accumulation of atoms *qua* effect occupies the same location as the atoms *qua* cause, due to the addition of the quality of magnitude, the accumulation *qua* effect can become perceptible. For example, there is the quality of largeness in a single atom, which is imperceptible. But when more and more atoms that bear largeness accumulate, largeness as a quality of magnitude adds up, so that after some point the whole accumulation becomes perceptible as large.

1.3. Dharmpāla's Refutation again

[41] Quoted from Miyamoto (2007, pp. 12–13). Xuanzang's Chinese translation reads:「量」云何? 謂微體、大體、短體、長體、圓體等名「量」。「微體」者, 謂以二微果為和合因緣, 二體所生一實,「微」詮緣因, 是名「微([短>]微[SYM])體」。「大([長>]大[SYM])體」者, 謂因多體、大([長>]大[SYM])體積集差別所生三微果等和合一實, 「大」詮緣因, 是名「大體」。「短體」者謂以二微果為和合因緣, 二體所生一實, 「短「詮緣因, 是名「短體」。「長體」者, 謂因多體、長體積集差別所生三微果等和合一實, 「長」詮緣因, 是名「長體」。「圓體」者有二種。一、極微;二、極大。「極微」者, 謂極微所有和合一實, 「極微」詮緣因, 是名「極微」。「極大」者, 謂空、時、方、我、實和合一實, 「極大」詮緣因, 亦名「遍行」等, 是名「極大」(T2138:54.1263a10-22) The Taishō text is garbled here. I emended it based on the Song, Yuan and Ming editions.

1.3. 此但有言都無實義。我先難汝。

1.3. [Dharmapāla answers:] All these are mere words, without a corresponding reality. I first pose the following challenges to you.

所生實果與諸極微既無別處,
應如極微越諸根境, 汝不能救何事餘言。

Since the substantially real effect thus produced has no separate location from those atoms, it should fall beyond the scope of cognitive objects for the sense organs, just like those atoms. If you cannot resolve this challenge, then what is the point of [saying] anything further?

若所依實如是相現, 應捨實體同彼能依。
既成他相, 應捨自相。

If the substantially real basis appears with such attributes [of largeness, etc.], then it would discard its substance (*shiti* 實體) and be the same as that which is based upon that (*nengyi* 能依; i.e., the qualities 德). Once it achieves the attributes of another [thing], it would lose its own attributes (*svalakṣaṇa*? i.e., being a substantially real entity).

亦不可說如頗胝迦不捨前相而現餘相,
其體無常前後異故。此若同彼, 應捨實體。

Nor can [the opponents] claim that [the case in question] is like that of a piece of crystal (*podijia* 頗胝迦; *sphaṭika*), which appears to have the attributes of something else without losing its previous [defining attributes]. This is because the substance of that [crystal] is impermanent, and differs over time. If this [i.e., atoms] were like that [i.e., the crystal], then [the atoms] would lose [their state of] a substantially real entity [which is permanent].

德依於實, 實體既無, 德亦非有。無實無德, 誰現誰相? 故可不[a]說「所生實果不捨自相而現他相」。如是即應唯德可見, 所有實性皆越根境, 此亦違汝自所立宗。

Qualities (*de* 德; *guṇa*) are based upon substantially real entities (*shi* 實; *dravya*). If there is no substantially real entity, then qualities also do not exist. If neither a substantially real entity nor qualities exist, then what is going to present itself, and with the attributes of what? Therefore one cannot claim that the substantially real effect appears with the attributes of something else without losing its own attributes. If that were the case, then it would follow that only qualities can be seen, and that all things having the nature of being a substantially real entity (*shixing* 實性; *dravyatā*?) fall beyond the scope of cognitive objects for the sense organs. This would also violate the thesis postulated by you [the opponents].

[a] Read "可不" as "不可."

Dharmapāla proceeds to refute the foregoing theory about the "addition of the quality of magnitude." His refutation begins with a decisive rejection of the core claim, followed by a refutation in the following three steps:

(1) If the accumulation formed by atoms overlapping with each other shows the attribute of largeness, then it would lose its own, essential nature, which not only includes the attribute of smallness but also its nature of being a substantially real entity (*dravya*).

(1a) One cannot claim that the situation is like the case of crystal, which appears with the attributes of something else without discarding its essential attribute. Dharmapāla rejects this analogy by pointing to the difference between crystal and an atom. A crystal, according to him, has a substance that is impermanent, but atoms as substantially real entities are permanent according to the opponent. Hence, Dharmapāla claims that if, like crystal, atoms are impermanent, then atoms would not qualify as substantially real entities (*dravya*).

(1b) Given (1a), if an atom appears with the attribute of largeness, then an atom would cease to be an atom as a substantially real entity. Given that qualities (*guṇa*) must be grounded in substantially real entities, without a substantially real entity as ground, upon what could the attribute of largeness as a quality be based?

(2) Another unwanted consequence for the opponents is that it follows from (1) that only qualities such as the attribute of largeness can be seen, but not substantially real entity.

I summarize Dharmapāla's argument as follows:

Opponents' thesis: Atoms, each with the attribute of smallness, accumulate by complete overlap, and appear with the attribute of largeness due to the addition of the quality of magnitude.

Dharmapāla's refutation: If the resulting accumulation of atoms appears with the attribute of largeness, then the constituent atoms would lose their own attribute of smallness, together with their nature of being substantially real entities. The opponents cannot say that the situation is like that of crystal, since crystal is impermanent but atoms are permanent. If the resulting accumulation of atoms ceases to be a substantially real entity, then there is nothing upon which the attribute of largeness could be grounded.

Dharmapāla concludes: The resulting accumulation would still be invisible. By this, Dharmapāla refutes the opponents' thesis that the resulting accumulation of atoms appears with the attribute of largeness.

2. The Second Theory of Accumulation of Atoms: Accumulation$_3$

As I already noted, most modern scholars are not aware that opponents responding to Vasubandhu still have the option of availing themselves of the notion of an accumulation$_3$ of atoms, i.e., an accumulation without physical contact. In what follows, Dharmapāla in his DGS cites two versions of accumulation$_3$.

2.1. Atoms Occupy Different Locations: Pre-AKBh

2.1. 復次有說極微有其形質、更相礙故, 居處不同。	Furthermore, there are masters who claim that atoms have their own form and matter (*xingzhi* 形質), and that atoms mutually obstruct each other, and for these reasons, that they occupy different locations.

According to Wengui, this is a revised position held by the Vaiśeṣikas, and corresponds to the original position held by the Buddhist Vaibhāṣikas prior to Vasubandhu's AKBh. According to Wengui, this position claims that two atoms obstruct each other and hence occupy different locations adjacent to each other. In sum, these two atoms produce *one* effect. This effect is also a substantially real entity, whose magnitude is equivalent to the gross sum of the two causes (i.e., the two atoms). The difference between Vaiśeṣika and Vaibhāṣika lies in the fact that for the former, the effect is permanent; while for the latter, the effect is impermanent.[42]

[42] Wengui says: 此勝論宗中異計云: 兩因極微既有形質更相障礙, 居處各殊相隣而住, 共生一果, 此一實果同二因量, 一果之量既同二因, 故果可見因不可見也。此計大同俱舍已前舊婆沙義, 然計生果是常, 不同彼也 (T2800:85.800c22-27).

2.1.1. Dharmapāla's Refutation

2.1.1. 是則極微住雖隣次而處各別, 應不和合。若許和合處同、不同, 即違自執、及有分過。	2.1.1. [Dharmapāla's refutation:] In that case, then since atoms are situated next to each other but in different locations, they should not form any connection. If you allow that the locations where atoms form connections [with each other] are (a) the same or (b) different, then you would either (a) go against your own premise[a] or (b) commit the fallacy of holding that atoms have parts (*fen*分; *bhāga*).

[a] That is, your own premise that atoms offer resistance to each other. As Wengui says: 二若許極微和合一處。則違自執更相礙義 (T2800:85.801a1-2)

Dharmapāla's objection is that under the opponents' theory that atoms do not come into contact, they cannot form any connection. And if the opponents want to insist that atoms do form connections, then they would commit a fallacy, regardless of whether they consider atoms to form connections in the same place or in different places. For the latter possibility, Dharmapāla basically repeats section 1 in the above.[43]

2.2. Atoms Form an Accumulation$_3$: Post-AKBh Vaibhāṣikas

The following passage presents the most refined theory from the realist camp. According to Wengui, this corresponds to the view held by the post-AKBh Vaibhāṣikas.[44] Since this theory holds that atoms form an accumulation$_3$, we can infer that this theory should be very close to, if not identical with, the target of Vasubandhu in Viṃ stanza 13. A probable scenario is that the Kāśmīravaibhāṣikas further developed the theory cited under the name of Bhadanta in the AKBh and then Vasubandhu attempted to refute it in his Viṃ, but with no certain success. In his DGS, Dharmapāla takes up the task of refuting this realist theory in the following passage.

[43] Wengui says: 述曰: 此責破也。此破有三意: 一、既許極微隣次別住, 則見和合共生果義。二、若許極微和合一處, 則違自執更相礙義。三、若許和合不同一處, 則兩因微各有觸著、不觸著分, 便顯極微有方分義。 應隨三意立三比量: 第一量云: 初二因微定不和合(宗), 居處別故(因), 如瓶盆等(喻)。 第二量云: 初二因微無相礙義(宗), 在一處故(因), 如一因微自望己體(喻)。 第三量云:初二因微必有方分(宗), 居處別故(因), 如稻麥聚(喻) (T2800:85.800c28-801a8).

[44] Wengui says: 頌意正破勝論, 兼意亦破小乘, 即破俱舍已後薩婆多義 (T2800:85.801a10-11)

有說: 極微生處各異,
雖復無間而不相觸,
各據一方相避而住。
積集差別似有方分;
無間處生似有流轉,
剎那前後展轉相續。
有因有果、非斷非常。
為兼破彼, 故復頌曰:

Some [masters] claim: atoms come into existence in different locations. Although there is nothing in between them (*wujian* 無間; *nirantara*), they do not come into contact (*chu* 觸; √*spṛś*) with each other. Each of them occupies a [separate] location and consistently avoid the other. Because they differ [spatially] in their aggregation (*jiji* 積集; i.e., an accumulation$_3$), they appear (*si* 似) to have direction-parts. Because they come into existence [in a location with] no gap [between it and the previous location], they appear to undergo development. The atom in the succeeding moment forms a continuum (*xiangxu* 相續; *saṃtāna*) with the atom in the preceding moment. [In this way, the continuum thus formed] has its causes and effects and is neither annihilated (*anuccheda*) nor permanent (*anitya* or *aśāśvata*)[a].
For the sake of refuting this claim [of the Vaibhāṣikas] together with that [claim held by the Vaiśeṣikas], [Āryadeva] presents the following stanza:

[a] That is to say: each individual atom is the cause, the accumulation of atoms thus formed is the effect. Given that the accumulation is constantly changing, it is neither non-existent nor permanent.

The crux of this position is that atoms come into existence in different locations. There is no contact (*chu* 觸; *sparśa*) between them, but neither is there any gap (*wujian* 無間; *nirantara*) between them. Both the idea of "no contact" and the idea of "nothing in between" are crucial here. The idea of "no contact" avoids the unwanted consequence of each atom "having direction-parts"; the idea of "nothing in between" is entailed by "no contact" because if there is something in between, then the issue of "contact" and "having direction-parts" will recur. A plausible way to understand this, I think, is to say that the accumulation$_3$ among atoms is like a school of sardines. There is no real link among the group. The individual sardine moves in tandem with its cohort in such a way that together the sardines appear to be a unified whole.

However, we are not in the clear yet: If atoms do not come into contact with each other, then how could there be *nothing* in between, since there must be empty space in between? We are left with a conundrum. Here Shentai 神泰 (d.u.; active 645–657), Xuanzang's disciple, who composed a commentary on AKBh, suggests that "nothing in between" means no atom of the space-element (*ākāśa-dhātu*) stands in between the two atoms, but still empty space (*ākāśa*) stands in between.[45]

Abhidharmakośa I.28a distinguishes between empty space (*ākāśa*) and the space-element (*ākāśa-dhātu*). The latter is defined as a "cavity" (*chidra*) that "contains light or darkness" (*ālokatamasin*) and hence falls under the class of visible matter or color (*varṇa*) (cf. *Abhidharmakośa* stanza I.10). This space-element is also termed "close to *agha*" (*agha-sāmantaka*). Interestingly, AKBh supplies two somewhat

[45] Cf. Fascicle 2 of Shentai's *A Commentary on the Abhidharmakośabhāṣya* (俱舍論疏): 今此文中云「謂於中間都無片物」。許有中間空隙, 然無空界極微色, 故云「都無片物」。是《正理論》中第二師義也。三、大德法救說: 極微相逼中無空隙, 然不相觸, 如下文述 (X836:53.30a23-b2).

discordant definitions for *agha*: the first being "highly capable of striking or of being struck," referring to solid, agglomerated matter; and the other being "free from striking," referring to empty space (*ākāśa*).[46] In any case, it seems clear that the space-element is not empty space *per se*, but constitutes *something* halfway between solid matter and empty space. Hence to say that there is "no gap" here means there is no space-element, but there is still empty space in between two atoms, so that the two atoms do not contact each other.

2.2.1. Dharmapāla's refutation

於一極微處 既不許有餘 是故亦不應 許因果等量(I.14) 論曰: 如是所說諸極微 相竟不能遮有方分失。	Since [you the opponents] do not allow that there are other atoms in the location of an atom, therefore you should also not allow that the cause and the effect are the same in terms of [having] the same magnitude (*parimāṇa*). (I.14) [Dharmapāla]: The attributes (*xiang* 相; *lakṣaṇa*) of atoms as characterized above [by the opponents] cannot in fact evade (*zhe* 遮) the fallacy of having direction-parts [for the atoms].

In response, Dharmapāla's refutation focuses on the fact that under this theory 2.2, atoms as characterized by the opponents must still have direction-parts and hence be impermanent. Dharmapāla's refutation below consists of several steps. First, shadows imply direction-parts. Second, movement implies direction-parts. Third, having "no direction-parts" implies invisibility.

[46] See Pradhan (1967): 18, lines 15-18. Also Cf. Pruden (1988–1990, Vol. 1, pp. 88–89).

2.2.1.1. Shadows Imply that Atoms Have Direction-parts;

何以故?頌曰:
微若有東方
必有東方分[a]
極微若有分
如何是極微(I.15)
論曰: 是諸極微既有質礙,
日輪纔舉舒光觸時, 東西兩邊光影各現,
逐日光移隨光影轉, 承光發影處既不同。
故知極微定有方分。
既有方分便失極微, 如是極微即可分析,
應如麁物非實、非常, 違汝論宗「極微
無方分、常住、實有, 造世間萬物」。

Why? [Āryadeva] presents the following stanza:
If an atom has an easterly direction, then that atom must have an eastern direction-part. But if an atom has a part, then how could it be an atom? (I.15)
[Dharmapāla:] Since atoms can obstruct, then when the sun has only just risen and the light it gives off touches [the atom], the shadows caused by the light appear in the east and in the west respectively, and the shadows move as the sun moves. Given that the location in which it is struck by the light and the location in which the shadows are cast differ, we know that atoms must have direction-parts.
If an atom had direction-parts, then it would cease to be an atom. Such an atom could be disaggregated, and would not be substantially real (*dravya-sat*) nor permanent, like a gross object (*cuwu* 麁物; *audārika*). This would go against your own premise, namely: "Atoms have no direction-parts; they are permanent and are substantially real; they constitute all entities in this world."

[a] Wengui says: 若能照光微在東, 即所照青微在西, 其所照青微即有東分承光、西分發影, 故言微若有東方必有東方分也 (T2800:85.801b9-11)

Dharmapāla here draws from the same argument of Viṃ to argue that the shadows caused by an atom imply that it has direction-parts. The passage from Viṃ reads:

chāyāvṛtī kathaṃ vā | (Viṃ 14c)
yady ekaikasya paramāṇor digbhāgabhedo na syād
ādityodaye katham anyatra chāyā bhavaty anyatrātapaḥ | *na hi tasyānyaḥ pradeśo 'sti yatrātapo na syāt* | (Lévi 1925, p. 7)

Or how is there shadow and obstruction? [14c]

> If no single atom were to have spatial differentiation, how would it be that when the sun rises in one place, there is shadow in one place, sunshine in another? For that [atom] does not have another portion on which there would be no sunshine. (Silk 2016, pp. 93 and 95)[47]

But here again I see a problem in Vasubandhu's and Dharmapāla's arguments. It is agreed by both Vasubandhu/Dharmapāla and their opponents that shadows exist. Nevertheless, shadows do not necessarily imply that each single atom has direction-parts. If the whole thing consisted of one single atom, then no doubt shadows would imply that the atom had direction-parts. But here the opponents' thesis is that atoms form an accumulation$_3$, and to form a large mass, which then causes shadows. So the existence of shadows can only prove that the large mass has direction-parts, but not that each single atom has direction-parts.[48] For this reason, I must judge that, again, Vasubandhu/Dharmapāla provide an invalid argument.

In fact, in Viṃ, the opponents do try to argue that shadows belong to the mass of atoms, but not to individual atoms. Vasubandhu summarizes this argument and then refutes it by resorting to the idea that the mass formed by the accumulation of atoms according to the opponents is not a real mass, since there is no real "link" among the atoms.[49]

2.2.1.2. Movement Implies Direction-parts of Atoms

復次, 所執極微定有方分, 行所依故, 如能行者。 凡所遊行必有方分, 若無方分則無所行。 何以故?頌曰。	Furthermore, [Dharmapāla criticizes the opponents by making a syllogism as follows:] [thesis:] The atoms as propounded [by the opponents] must have direction-parts, [reason:] because they are the basis for movement (*xing* 行; *gati*?), [example:] like things that move[a]. Whatever moves must have direction-parts. If something has no direction-parts, then it does not move. Why? [Āryadeva] presents the following stanza:

[a] Wengui says: 謂所執極微定有方分(宗), 行所依故(因), 諸行所依者皆有方分如能行者(同喻)、若無方分則無所行如虛空等(異喻) (T2800:85.801b25–27)

[47] For Tola and Dragonetti's English translation, see Tola and Dragonetti (2004, p. 144).

[48] If we adopt Shentai's idea that there exists the space-element (*ākāśa-dhātu*) between the atoms in an accumulation$_3$, then it seems easy to account for the existence of shadows, since the space-element is defined as "cavity" (*chidra*) that "contains light or darkness" (*ālokatamasin*), and hence can explain why shadows exist.

[49] See Viṃ 14d. For Silk's translation, see Silk (2016, pp. 97 and 99). For Tola and Dragonetti's English translation, see Tola and Dragonetti (2004, p. 145).

要取前捨後
方得說為行(I.16ab)
論曰: 進所欣處, 名為「取前」; 退所厭處, 名為「捨後」。要依前後方分差別起取捨用, 乃名為「行」。離方分行所未曾見, 極微既是行用所依, 故知極微定有方分。若無所行、行用差別, 是則應撥行者為無。

Only when something takes up [the position] before it and leaves [the position] behind it can it be said to be moving. (I.16ab)
[Dharmapāla:] Advancing to the place it prefers is what is meant by "to taking up [the position] in front of it"; Withdrawing from the place it dislikes is what is meant by "leaving [the position] behind it." The functions of taking up and leaving can arise only in dependence upon differences in direction-parts [such as those] between front and back, and only thus can this qualify as "movement." There is no such thing as movement without direction-parts. Given that atoms are the basis (*suoyi* 所依; *āśraya*?) for the function of motion, we know that atoms must have direction-parts.
If one does not allow distinctions with respect to the location to which one moves and with respect to the function of motion[b], then one should deny the existence of things that move.

[b] The distinction regarding the location of motion refers to front and back; the distinction regarding the function of motion refers to taking up [one position] and leaving [another]. Cf. Wengui says: 若汝不許有所行處及能行用二種別者 (T2800:85. 801c17–18)

故說頌曰:
此二若是無
行者應非有(I.16cd)
論曰:依前後方、起取捨用。方若非有、用亦應無。若爾雖行應如不動。若汝撥無行處、行用, 是則所依行者亦無。執此極微便著邪見。

Hence [Āryadeva] presents the following stanza:
If these two (i.e., the distinctions with respect to the location to which one moves and with respect to the function of motion) do not exist, then the thing that moves would not exist. (I.16cd)
[Dharmapāla:] Only in dependence upon locations in front and behind can there arise the functions of taking up and leaving [space]. If there were no [difference] in location, then the above function would not exist. In that case, it would be as if the moving body were at a standstill, even though in motion. If you deny the existence of [the two distinctions with respect to] the location of motion and [with respect to] the function of motion, then the basis, i.e., the thing that moves, would not exist either. If one holds atoms to be thus, then one is wedded to false views.

又諸極微若無行用, 則不能造有方分果。若無所造有方分果, 即諸天眼亦無所見。是則所立一切句義越諸根境頓絕名言, 云何自立句義差別?	Moreover, if atoms lack the function of motion, then they are incapable of producing an effect that has direction-parts. If they cannot produce an effect that has direction-parts, then even a heavenly eye (*tianyan* 天眼; *divyacakṣus*) could not see [the effect]. That being so, then all the real entities (*padārtha*) established [by the opponents] would fall beyond the scope of cognitive objects for the sense organs, and at a single stroke, would defy all description. How then could [you the opponents] establish the distinctions between the real entities (*padārtha*)?

Both Dharmapāla and Vasubandhu appeal to the existence of motion or going (*gati*) to refute the opponents' theory of atoms, but in different ways. In Viṃ, Vasubandhu resorts to the existence of movement from this place to another place in order to refute the idea that external objects are simple (*eka*).[50] But here Dharmapāla argues that if atoms have no direction-parts, then all movement would be impossible.

2.2.1.3 No Extension Means No Visibility.

[50] Cf. Viṃ stanza 15 and auto-commentary.

復次, 若執極微無初、中、後, 即淨眼根亦不能見, 應如空花都無所有。為顯此義, 故說頌曰。
極微無初分
中、後分亦無
是則一切眼
皆所不能見(I.17)
論曰。若執極微是常、是一, 無生、住、滅三種時分;無前、中、後三種方分, 應似空花都無實物。是則極微越諸根境, 不為一切眼所觀見, 自、他推撿都不可得, 是故不應計為實有。

此中正破外道所執「極微是常、無有方分、越諸根境、非眼所見」。兼顯極微無常、有分、非越根境、淨眼所見。

Furthermore, if, as [the opponents] claim, atoms have no front, middle and back, then even someone with a purified eye could not see them. But in that case, they would be non-existent, like flowers in the sky (*konghua* 空花; *khapuṣpa*). In order to demonstrate this point, [Āryadeva] presents the following stanza:
[If] Atoms do not have front, middle nor back parts; thus they could not be seen by any kind of eyes. (I.17)
[Dharmapāla] If [the opponents] hold that atoms are permanent and simple (*eka*) [i.e., without proper parts], namely, lacking the three temporal aspects, that is, coming into existence, enduring, and going out of existence, and lacking the three spatial aspects, that is, front, middle and back, then those atoms would not be substantially real entities (*shiwu* 實物; *dravya*) at all, just like flowers in the sky. If that were the case, then all atoms would fall beyond the scope of cognitive objects for the sense organs and could not be seen by any kind of eyes. They could not be ascertained *via* inference-for-oneself nor *via* inference-for-others (*zita tuijian* 自他推撿; *svārtha-parārthānumāna*), and hence they could not be considered as substantially real (*shiyou* 實有; *dravya-sat*).
Here [Āryadeva's] main purpose is to refute what is held by non-Buddhists, namely, the view that "atoms are permanent and without extension, exceed the scope of cognitive objects for the sense organs, and cannot be seen by the eyes." Concurrently, [Āryadeva] means to show that atoms are impermanent, have extension, do not fall beyond the scope of cognitive objects for the sense organs, and are visible to purified eyes.

If atoms had no direction-parts, then they would not be visible, and hence could not be considered as substantially real entities. But again, I think Dharmapāla here provides an invalid argument, because it begs the initial question, that is, whether

atoms *really* exist or not. If lack of extension implies invisibility, which further implies non-existence, then Dharmapāla would not need to provide an array of arguments to prove that atoms do not exist, since most if not all of the opponents who consider atoms as permanent (*nitya*) would agree that atoms have no direction-parts.

3. Refutation of the Permanence of Atoms

According to Wengui, what Dharmapāla does next is to dispel the notion that atoms are permanent. Wengui states that Dharmapāla's refutation falls into two parts: (a) with respect to effects (*yueguo* 約果); (b) with respect to impenetrability (*yuedui* 約對) between atoms.[51]

3.1. With Respect to Effects:

復次, 為破極微因果同處、
及顯因體定是無常, 故說頌曰:
若因為果壞
是因即非常
或許果與因
二體不同處(I.18)

Furthermore, in order to refute the claim that the cause and effect of atoms occupy the same location, and in order to show that the cause itself (*yinti* 因體) must be impermanent, [Āryadeva] presents the following stanza:
If the cause is destroyed by the effect, then the cause is not permanent; alternatively [if not, then one must] allow that the cause and the effect do not occupy the same location. (I.18)

[51] Wengui says: 此下兩頌破極微體是常也, 初頌約果壞破常, 後頌約有對破常 (T2800:85.802b1-3)

論曰: 諸有礙物餘礙逼時,
若不移處必當變壞。
如是極微果所侵逼, 或相受入、
異體同居, 如以細流漑麁沙聚;
或復入中令其轉變, 如妙藥汁注赤鎔銅。

[Dharmapāla:] Anything that offers resistance to [something else], if impinged upon by another thing, must be destroyed if it does not move to another location. Thus, when the effect of atoms impinges upon [the cause], either it (the cause) must assimilate the other [the effect] and both bodies, while distinct, become co-extensive, as in the case where a small stream [of water] seeps into a collection of coarse sand; or [the effect] must enter into [the cause] and transform it, as in the case where a marvelous medicinal liquid is infused into red-hot melted copper.

若許如前則有諸分, 既相受入,
諸分支離。如相離物不共生果,
是則應無一切麁物。又若同彼,
有諸細分, 即應如彼體是無常。

If you allow the former alternative [namely, that atoms penetrate into each other], then [it follows that] atoms have parts (*fen* 分; *bhāga*). [And then it follows that] since [what is infused and what infuses] interpenetrate each other, then their parts would be separate [from each other]. Just as separate things cannot both produce [the same] effect, so there cannot be any gross object (*cuwu* 麁物; *audārika*) [as the effect]. Moreover, in this case [i.e., the first alternative], then since [what is infused] has tiny parts, then atoms should be similar, namely, impermanent.

若許如後, 自說極微體有變壞, 何待徵難?

If you allow the second alternative, then you concede that the atoms [you claim to be permanent] would decay. In that case, why should I bother to challenge you?

Dharmapāla argues that there are only three options when an atom meets another. Either (3.1.1.) $atom_a$ and $atom_b$ coexist by mutually permeating each other, like water seeping into sand, or (3.1.2.) $atom_a$ is transformed by $atom_b$, as in the case of a marvelous medicinal liquid infused into melted copper. Both options, according to

Dharmapāla, end up claiming that atoms have parts and hence must be impermanent. Hence the only option left is (3.2.) below.

3.2. With Respect to Opposition:

若並不許, 應許極微互相障隔、因果別處, 以有礙物處必不同, 如非因果諸有礙物。

If you allow neither [of the above] alternatives, then you must allow [the following syllogism. Thesis:] atoms obstruct each other and are separate from each other, and the cause and the effect occupy separate locations; [reason:] because mutually impenetrable objects must occupy different locations; [example:] just like impenetrable objects which are not cause and effect to each other[a].

又說頌曰:
不見有諸法
常而是有對
故極微是常
諸佛未曾說(I.19)

Furthermore, [Āryadeva] presents the following stanza:
No dharmas that are permanent can also be impenetrable *(youdui* 有對*; pratigha)*[b]. Hence the Buddhas never claim that atoms are permanent. (I.19)

論曰: 現見石等於自住處對礙餘物, 既是無常, 極微亦爾, 云何常住? 對礙與常互相違反, 二法同體, 理所不然。

[Dharmapāla:] It is patently apparent that things like a stone, etc., occupy their own locations, and also offer resistance to (*duiai* 對礙) other things. Granted that these things are impermanent, so too are the atoms. How could they be permanent? [The attribute of] impenetrability (i.e. offering resistance) and being permanent are contrary to each other, and hence it is not logical to claim that both [attributes] inhere in the same substantially real entity.

[a] Wengui says: 若汝不許如前二徵(按:微), 應許因微與其果實各各別處(宗), 以為礙故(因), 如非因果諸有礙物, 謂瓶盆等(喻) (T2800:85.802c6-8)

[b] Here in the stanza and the commentary, the two notions *youdui* 有對 (impenetrable; *pratigha? sa-pratigha*) and *you'ai* 有礙 (obstructing; *pratibandha*) seem to be treated as synonymous. Cf. Hirakawa (1973, Vol. II, pp. 37 and 34).

The third option (3.2) in the preceding section is refuted here. Here Dharmapāla claims that since the attributes of "being permanent" and "being obstructing" are contrary, they cannot inhere in the same substantially real entity; hence, if atoms offer resistance to other objects, they cannot be permanent. The underlying

assumption is that if something can obstruct, then it must have direction-parts, and hence cannot be permanent.

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Dharmapāla's discussion of the theory of atoms in the first fascicle of DGS ends here.

Conclusion

In this paper, I gave a new interpretation of Viṃ stanzas 12–13, drawing clues from AKBh, and from Dharmapāla's DGS read with the aid of Wengui's commentary. I have argued that Vasubandhu's refutation in Viṃ stanza 12 is valid only if we assume that the only possible way atoms can accumulate is by means of physically contacting neighboring atoms. Conversely, if the opponents do not accept this assumption, then Vasubandhu's refutation would miss its target.

Viṃ stanza 13 cites the position of the Kāśmīravaibhāṣikas and seeks to refute it, and for this reason we must assume that the Kāśmīravaibhāṣikas hold that atoms can form an accumulation$_3$, because this would be the only way to deal with the challenge previously posed in Viṃ stanza 12. Dharmapāla provides more details about this theory (DGS section 2.2) and seeks to refute it again. Assuming the same Vasubandhu to be the author of AKBh, we must judge that Vasubandhu himself was aware of the limitations of his Viṃ stanza 12, and this is why he felt the need to further refute the position of the Kāśmīravaibhāṣikas. However, I have also argued that Vasubandhu's refutation of this position in stanza 13 fails. If my argument holds, we must conclude that the refutation of the accumulation of atoms in Viṃ may not be successful. This explains, at least in part, why Dignāga felt the need to find new arguments in his refutation of realism in ĀP.

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