

Three Types 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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Introduction

The theory of atoms and in particular the theory about the accumulation of atoms are 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 Vaiśeṣikas) 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 4th early 5th century) and Dharmapāla (ca. 6th 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* (“A 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 (“A Commentary on the *Catuḥśataka* of the

¹ I follow Kano Kazuo in reconstructing the title of Vasubandhu’s “Twenty Stanzas” as *Viṃśikā* instead of *Viṃśatikā*. Cf. Kano 345 in particular.

² As far as I know, nowadays almost all scholars agree that it was the same Vasubandhu who 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 262-3, 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 had already been 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 Kāśmīravaibhāṣikās position in Viṃ stanza 13. So the assumption that the same Vasubandhu composed AKBh and then Viṃ would strengthen my thesis. But 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 Kāśmīravaibhāṣikās 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.

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 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

³ For some general information about atoms (*paramāṇu*), see Pruden 184ff. and Karunadasa 142ff.; for a brief discussion of the distinction between *dravya-paramāṇu* and *saṃghāta-paramāṇu*, see Karunadasa 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 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 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 to the eastern side and the part on the western side. If a thing has direction-parts then that thing would have extension in space.

Vasubandhu's counter-argument: It would be impossible for the realists to maintain that mere atoms could accumulate a large enough mass to constitute the conditions *qua* cognitive object (*ālambana-pratyaya*), without forfeiting their commitments 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 Kāśmīravaibhāṣikās, 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 Kāśmīravaibhāṣikās? Moreover, this specific theory of the Kāśmīravaibhāṣikās 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

⁶ See below footnote 22, for example, the comments by Matthew Kapstein.

⁷ Quoted from Kapstein 198.

to do with extension. In ĀP, the key is that nothing can fulfill both requirements for qualifying as a condition *qua* cognitive object (*ālambana-pratyaya*). 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*), and hence capable of exerting causal efficacy, it, on its own, is incapable of bestowing any 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 nominally-real (*prajñapti-sat*), which 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 position⁹ 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 “having

⁸ For Sanskrit fragment from Kamalaśīla on *Tattvasaṃgraha* stanzas 2081-2082, Cf. Tola and Dragonetti 12. For an English translation, cf. Tola and Dragonetti 33ff.

⁹ 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.

parts” vs. “having no parts” of atoms 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 through such pains to compose ĀP, if Vasubandhu’s Viṃ has already refuted all possible ways for atoms to accumulate? If so, then what would be the undisclosed defect in Vasubandhu’s counter-argument, if any?

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 Viṃ argument, 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 (d.u.). 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*¹⁰ and Kamalaśīla’s commentary¹¹. On the other side, Saṃghabhadra and Dharmakīrti defend the

¹⁰ Cf. Suganuma, for example.

¹¹ Cf. below, footnote 17.

atomic doctrine.¹² 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 showing that if we read *Viṃ* in light of *AKBh* and *DGS*, we realize that Vasubandhu's refutation of atomic theories is 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 (not necessarily flawless) arguments can be reconstructed for both the proponents and the opponents. It is a different matter whether the proponent's intended opponents did exist in history, or whether the position of the opponents in a philosophical text matches historical testimony.¹³ 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;¹⁴ what is the minimum

¹² According to Eltschinger, Dharmakīrti may subscribe to the notion of atoms merely at the provisional level, see Eltschinger pages 429-430.

¹³ For example, Kuiji attributes the position targeted by Vasubandhu's in *Viṃ* stanza 12 to the Sautrāntika, but also reports that according to Sautrāntika atoms have parts. See Fascicle 2 of his *A Commentary on Viṃśikā* (唯識二十論述記) (T1834:43.992c16-18) and Fascicle 2 of his *A Commentary on the Cheng weishi lun (Vijñaptimātratāsiddhi)* (成唯識論述記) (T1830:43.267a28-b4).

¹⁴ I am aware that some realists would not define an atom (*paramāṇu*) as infinitesimally small or having no extension. For example, Burke 273 points out that the Vaiśeṣikas define

number and types of atoms required for constituting a molecule as a minimal stand-alone unit of reality;¹⁵ what was at stake in the debates between Sarvāstivāda and Sautrāntika,¹⁶ etc. My main approach will be to recover the philosophical arguments, but I also supplement this philosophical analysis with historical information where relevant.

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* (*prasaṅga*) argument in Viṃ hemistich 12ab. I thank Professor Dan Lusthaus for drawing my attention to Burke’s paper. This point is made clear in Dharmapāla’s DGS: 既有方分便失極微，如是極微即可分析，應如龜物非實非常，違汝論宗「極微無方分常住實有，造世間萬物。」, see below Section 2.2.1.1 for my English translation.

¹⁵ This means that atoms exist in reality not individually but always as a group (molecule); for example, the theory of *rūpasamghāta* that concerns the infamous notion of “eight substances arise together” (*aṣṭa-dravyaka utpadyate*; 八事俱生) in AKBh. Cf. Yoshimoto 331. Here *shi* 事 (*dravya*) means “substantially-real entities,” i.e., *paramāṇu*. A natural reading of this 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 center, surrounded by each atom of earth, water, fire and wind, constitutes the first group of five, and then with the atom of smell (*gandha*), of taste (*rasa*), and of contact (*sparsā*) to constitute a whole group of twenty atoms. See Sasaki. Many thanks to Professor Tōru Funayama for drawing my attention to Sasaki’s paper.

¹⁶ Cf. Dhammajoti, for example.

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.¹⁷ To avoid confusion, in this paper I deliberately use the following set of terms. My definition is 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.

Accumulation₁: atoms are accumulated, irrespective of whether atoms contact neighboring atoms or not. Accumulation₂ and Accumulation₃ below are sub-sets of accumulation₁. In Viṃ,

¹⁷ 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 (*parasparam saṃyujyante*); (2) atoms have intervals between them and never contact (*sāntarā eva nityaṃ na sprśanti*); (3) atoms do not have intervals between them, but there is the notion (*saṃjñā*) of that they contact (*nirantaratve tu sprśtasamjñā*). It is noteworthy that Kamalaśīla also distinguishes between accumulations where atoms contact or do not contact each other. Cf. Kurihara 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 *kalāpas* (the counterpart of *saṃghāta-paramāṇu* in AKBh) come into physical contact, see Karunadasa 152ff.

the sense of accumulation₁ is carried by the term *saṃhatās* in Viṃ 11c, a past participle and hence an adjective from the Sanskrit root \sqrt{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. forming an accumulation₁, irrespective of whether atoms contact neighboring atoms or not).

Accumulation₂: 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 accumulation₂ via six connections with six neighboring atoms: on the top, at the bottom, and at the four sides.¹⁸

Accumulation₃: atoms are accumulated without physical contact with neighboring atoms. This stands in sharp contrast to accumulation₂. In an accumulation₃, 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*

¹⁸ 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 13); “Connection and separation have two substances as their locus.” (*saṃyogavibhāgau dvidravyāśritau*) (Miyamoto 39).

asamyogāt tatsamghāte 'sti kasya sah, he means to say: Since there is no connection of an atom [with neighboring atoms], in an accumulation₃ of atoms (*tat-samghāte*), which [atom] does that [connection, i.e., connection between two such accumulation₃-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 to combat 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 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 accumulation₂, 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 Kāśmīravaibhāṣikās hold the theory that it is not individual atoms that form an accumulation₂; rather, it is the aggregations (*saṃghāta*)¹⁹ of atoms that form an accumulation₂ with neighboring aggregations. The underlying assumption here is that since these aggregations have parts, to claim that they form an accumulation₂ to become

¹⁹ Later in this paper, I will argue that "aggregation" (*saṃghāta*) here must be understood in terms of accumulation₃.

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 back²⁰ 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 common sense experience 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., would be inexplicable.

As shown below, Dharmapāla's DGS also reiterates some of the same arguments. But since this is not the main issue for this study, I will only render some brief comments on the

²⁰ 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. Cf. Tola and Dragonetti 98 & 109ff.

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 Kāśmīravaibhāṣikās 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 that logical defect - but on being conglomerated (the atoms) become connected among themselves.” (Tola and Dragonetti 143)²¹

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

²¹ The Sanskrit text reads: *naiva hi paramāṇavaḥ saṃyujyante niravayavatvāt | mā bhūd eṣa doṣaprasaṅgaḥ | saṃhatās tu parasparaṃ saṃyujyanta iti kāśmīravaibhāṣikās |* (Lévi 7) Kapstein’s translation reads: “The Kāśmīri Vaibhāṣikas, 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 198)

would Vasubandhu go on to bother himself with refuting a *particular* theory of accumulation held by these Kāsmīravaibhāṣikās? 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 burning 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 confesses, “The problem posed by the first horn of the dilemma seems to me clearly to be a real difficulty.”²² 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 accumulation₂ 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 accumulation₃ 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.

²² Kapstein 189-190.

Kapstein seems to agree with the direction I suggest, as he comments thus on the Kāśmīravaibhāṣikās' 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 cluster. (Kapstein 2001: 191; my emphasis).

Kapstein's idea that atoms do not fill a given space, though not elaborated, could be taken to mean that atoms do not contact each other because Kapstein is very clear in interpreting the Kāśmīravaibhāṣikās position to mean that "the aggregations are mere collections of unconjoined atoms." (ibid.)²³

A strong support for my interpretation comes from Vasubandhu's careful, though implicit, distinction between accumulation₂ and accumulation₃. In the case of the former, he uses words related to the Sanskrit root \sqrt{yuj} to highlight that there are connections (*saṃyoga*) among atoms. For example, the first hemistich of Viṃ 12 and Vasubandhu's auto-commentary reads:

²³ 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 202; my emphasis) Kapstein does not explain where he adopted this idea from.

ṣaṭkena yugapad yogāt paramāṇoḥ ṣaḍamśatā | (12ab)

ṣaḍbhyo digbhyaḥ ṣaḍbhiḥ paramāṇubhir yugapad yoge sati paramāṇoḥ

ṣaḍamśatā prāpnoti | *ekasya yo deśas tatrānyasyāsambhavāt* | (Lévi 7)

The basic line of thought here is that if atoms form an accumulation₂, 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 accumulation₂. 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 Kāśmīravaibhāṣikās 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 accumulation₂.²⁴

Now if the term *saṃghāta* refers to an aggregation in which seven or more atoms form an accumulation₂, 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 accumulation₃, 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. And this would explain

²⁴ The term *saṃghāta* has a history. Vasubandhu in AKBh on *Abhidharmakośa* II.22 uses the term *rūpasamghāta* to refer to, so to speak, a molecule, i.e., a minimal (*sarvasūkṣma*) collection of atoms.

why Vasubandhu still needs to devote stanza 13 to try to refute this position. Namely, Vim hemistich 12ab refutes accumulation₂, and stanza 13 provides counter-argument against accumulation₃.

Given the contrast between accumulation₂ and accumulation₃, the adjective *saṃhatās* in verse 11c should mean “accumulated in terms of accumulation₁, including both accumulation₂ and accumulation₃.”²⁵

This line of interpretation meets its only difficulty with the term *saṃhatās* in the auto-commentary to stanza 13 where Vasubandhu quotes the Kāśmīravaibhāṣikās’ 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 accumulation₃ (i.e., the meaning of *saṃghāta* in stanza 13)” rather than “aggregated in terms of accumulation₁ (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.

Now if we follow the above distinction closely, we can achieve a coherent reading of Vim stanza 13. Vasubandhu begins by citing the position of the Kāśmīravaibhāṣikās, who claim that instead of single atoms, it is the aggregations (*saṃhata* but here read in the sense of

²⁵ 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*).

saṃghāta, meaning an aggregation in terms of accumulation₃) that form connections (*saṃ-
√yuj*) with one another:

saṃhatās tu parasparam 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 |*

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*)?” This means that, if according to the Kāśmīravaibhāṣikās 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 accumulation₂ 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*).” This means that, against the previous challenge, the Kāśmīravaibhāṣikās rejoin by conceding: “Then [let us agree that] even though [they are] aggregations, they are not connected (*saṃyujyante*) with neighboring aggregations.” Against this rejoinder, Vasubandhu further challenges: “Then it should not be claimed (*na vaktavyam*) that a connection (*saṃyoga*) is not established due to 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 (*ekam dravyam*).”

In this way, we achieve a coherent reading of Viṃ stanza 13 and auto-commentary by closely adhering to the distinction between accumulation₂ and accumulation₃, and reading the term *saṃghāta* here as an aggregation without connections (*saṃyoga*) among atoms (namely an aggregation in terms of accumulation₃). This distinction cannot be overemphasized. However, to the best of my knowledge, no modern scholar has explicitly pointed this out.²⁶

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 Kāśmīravaibhāṣikās maintain that molecules (*saṃghāta*) as groups of atoms can form accumulation₂ since these molecules possess parts, as they commented:

...the atoms do not present themselves isolated, but forming cohesive

²⁶ 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. above footnote 22.

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 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 do not seem to touch on this issue at all.

So far, I have answered the above questions (1) and (2), namely, the Kāśmīravaibhāṣikās 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 resolved by Viṃ stanza 12.

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

Now turning back to Viṃ 13, I further argue that Vasubandhu’s counter-argument is not successful, and hence the Kāśmīravaibhāṣikās’ proposal that atoms form an accumulation₃ to

become aggregations and those aggregations further form an accumulation₃ to become a perceptible sense object is not defeated. The argument between Vasubandhu and his opponents runs as follows:

O₁ (opponents' view (Kāśmīravaibhāṣikās)): atoms form aggregations (*saṃghāta*) in terms of accumulation₃ (i.e., without connections). These aggregations further form accumulation₂ (i.e., with connections) among themselves.

V₁ (Vasubandhu's counter-argument in Viṃ. 13ab): To what does that connection (*saṃyoga*) between two aggregations of atoms belong? This means that 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 accumulation₂ with another aggregation.

O₂ (opponents' revised view): Then [let's agree that] those aggregations are not connected (*saṃyujyante*) with each other. That is to say, atoms form accumulation₃ to become aggregations, and aggregations form accumulation₃ to become a perceptible mass.

V₂ (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 for those 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 O₂ “[Let us agree that] those aggregations are not connected (*samyujyante*) 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 Kāśmīravaibhāṣikās of being inconsistent by 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 in contradiction with Q:

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

Since P does not contradict Q, the Kāśmīravaibhāṣikās are not inconsistent by 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. More importantly, even if Vasubandhu is right that the Kāśmīravaibhāṣikās are committing some logical fallacy by holding both P and Q at the same time, I am still not sure why this criticism would refute the

Kāśmīravaibhāṣikās' theory that atoms can form an accumulation₃.²⁷

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 accumulation₂. But Viṃ 13 does *not* successfully refute the claim of the Kāśmīravaibhāṣikās that partless atoms can form an accumulation₃ to become an aggregation (*saṃghāta*), and those aggregations themselves further form an accumulation₃ 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 Accumulation₃ from AKBh

As I have argued above, Vasubandhu's refutation in Viṃ 12 is valid only if we assume that accumulation₂ is the only way to maintain atomic accumulation. 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 Kāśmīravaibhāṣikās strongly suggests that he was aware that his counter-argument in Viṃ

²⁷ 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 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."

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 accumulation₃.

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

Moreover, do atoms contact each other, [or] not? The Kāśmīra masters [claim] they do not contact. Why? To being with (*tāvat*), if those substantially-real entities (*dravya*) contact by complete overlap (*sarvātmanā*), then they would become mixed [with each other] (*miśrī- √bhū*). [But] [if they contact] at one point (*ekadeśa*) [only], then the unwanted consequence would follow (*pra- √sañj*) that they would become things that have parts (*sāvayava*). And yet atoms are things with no parts (*niravayava*). (AKBh 32.11-13; my translation)²⁸

²⁸ The Sanskrit text reads: *kiṃ punaḥ paramāṇavaḥ sprśanty anyonyam āhosvin na| na sprśantīti kāśmīrakāḥ| kiṃ kāraṇam| yadi tāvat sarvātmanā sprśeyur miśrībhaveyur dravyāṇi| athaikadeśena sāvayavāḥ prasajyeraṇ| niravayavās ca paramāṇavaḥ|* (AKBh 32.11-13). 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

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 was already aware that there was a way to get around the counter-argument in Viṃ stanza 12.²⁹

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

Bhadanta [claims] that [atoms] do not contact, but in terms of [the idea that there is] no interval (*nirantara*, i.e., the sense of immediacy) [between atoms], there is the notion of [their] being in contact (*sprṣṭa-samjñā*) (Namely, conceptually, we also say they are in contact). [We] should follow (*eṣṭavya*) Bhadanta's interpretation. Otherwise, although there is an interval (*sāntara*) between the atoms, since this interval is zero (*śūnya*), by which would an entry (*gati*) [into each other, i.e., the idea of *miśrī-√bhū* mentioned above] be obstructed, since atoms are approved to be impenetrable (*sapratigha*)? ³⁰ And since (*iti*) the aggregations are not

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, Vol. I: 120)

²⁹ It is interesting here to note that according to AKBh, the Kāśmīra masters had already been 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.

³⁰ A similar report can also be found in the *Mahāvibhāṣā*, where it is reported that according

different from the atoms, [when] those aggregations are in contact, those [atoms] themselves are in contact, like [the case when those aggregations] are broken (*rūpyante*³¹) [, the atoms inside aggregations are not in contact]. Moreover, if the difference of 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 of direction-parts), then even if atoms are in contact, there would still be no unwanted consequence [of atoms having parts.]³²

to Vasumitra and Bhadanta, atoms do not contact each other in an accumulation. See T1545:27.380a18-23 and T1545:27.684a8-11.

³¹ Both Chinese translations have the sense of “being broken (變壞)” for *rūpyante*. In AKBh on I. 13, it says that *rūpyate* means *bādhyate* (“be damaged, to suffer”) (AKBh 9.12). I think the sense here is that given that an aggregation is not different from individual atoms, when an aggregation contacts another aggregation, it is an individual atom that contacts another atom. Likewise, when an aggregation dissolves, it is an individual atom that break the link with another atom.

³² The Sanskrit text reads: *na sprśanti nirantare tu sprśtasamjñeti Bhadantaḥ| Bhadantamatam caiṣṭavyam| anyathā hi sāntarāṇām paramāṇūnām śūnyeṣu antareṣu gatiḥ kena pratibādhyeta| yataḥ sapratighā iṣyante| na ca paramāṇubhyo 'nye samghātā iti| ta eva te samghātāḥ sprśyante yathā rūpyante| yadi ca paramāṇor digbhāgabhedāḥ kalpyate, sprśtasyāsprśtasya vā sāvayavatvaprasaṅgaḥ| no cet, sprśtasyāpy aprasaṅgaḥ || (AKBh 33.2-7). Pruden’s English translation reads: “1. The Bhadanta says: “There is not, in reality, any*

Here the notion of “without interval” (*nirantara*) needs some clarification. “Without interval” here cannot mean “in mutual contact” because according to Bhadanta and Vasubandhu, atoms do not physically contact (*√sprś*) each other. I suggest that “without interval” 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).

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 *Vim* stanza 12. Second, the passage anticipates the similar kind of criticism found in *Vim* verse 13ab, namely if an aggregation contacts another aggregation, then it is an atom inside the

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, Vol. I: 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).

aggregation that contacts (i.e., forms a connection 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 *Kāsmīravaibhāṣikās* in *Viṃ* stanza 13. It is precisely because the distinction between accumulation₂ and accumulation₃ 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 atomic accumulation. My main purpose is twofold. First, I try to show that the issue of whether atoms contact or not contact 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 accumulation₃ held by the *Kāsmīravaibhāṣikās*. In *Viṃ*, while criticizing this theory, Vasubandhu did not give us any details, but Dharmapāla does give us more details in DGS.

DGS is a commentary on Āryadeva's *Catuhśataka* by Dharmapāla, translated by Xuanzang (602-664). Tom Tillemans (2008) has provided a general introduction to the *Catuhśataka* and its commentaries. The Chinese translation comprises ten fascicles, divided into eight chapters

(corresponding to the original eight chapters of the *Catuḥśataka*³³). One of the key features of DGS is that Dharmapāla engages with various Buddhist and non-Buddhist doctrinal positions, and hence this text contains a rich vein of source material shedding light on the larger context of Indian philosophy around the 6th century. More scholarly attention should be devoted to this overlooked text.

In translating DGS into English, I also consult the commentary by Wengui (文軌; date unknown; ca. 7th century CE), 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.³⁴

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's year of life was during 615-675.³⁵

The following translation includes the key passages from the first chapter of DGS. The main

³³ 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.

³⁴ http://idp.bl.uk/database/oo_scroll_h.a4d?uid=-6123781299;recnum=59140;index=6
(Accessed Sept. 23, 2012).

³⁵ Shen 15.

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):

Accumulation₂

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: Accumulation₃

2.1 First version: Atoms occupy different locations (Pre-AKBh Vaibhāṣika)

2.1.1. Dharmapāla's refutation

2.2. Second version: Atoms form an accumulation₃ (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 Atom Itself

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 contact each other in an accumulation. The first theory holds that there is contact, but the second set of theories holds not. This supports my interpretation that in discussions of the accumulation of atoms, a major issue is whether atoms contact 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 Kāśmīravaibhāṣikās 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. 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 accumulation³. Hence we may say that Dharmapāla rearranges 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 why *Viṃ* does not successfully refute the atomic theories, 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: Accumulation₂

The first position, which Wengui attributes to the Vaiśeṣika school,³⁶ reads as follows:

<p>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。</p>	<p>1. Furthermore, some [masters] hold: Atoms are permanent (<i>chang</i> 常; <i>nitya</i>) and are substantially-real (<i>shi</i> 實; <i>dravya-sat</i>). In connection (<i>hehe</i> 和合; <i>saṃyoga</i>), they adds power to each other and produces something. Without any detriment to their own essence (<i>ziti</i> 自體; <i>svarūpa?</i>), they bring out various effects.</p>
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1.1. Dharmapāla's Refutation

<p>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。</p>	<p>1.1. [Dharmapāla's refutation:] This also is not true, because [their] tenet (<i>yi</i> 義; <i>artha?</i>) cannot be established. If one allows connections (<i>hehe</i> 和合; <i>saṃyoga</i>) [among atoms], then [one should admit that] atoms must have direction-parts (<i>fangfen</i> 方分; <i>dig-bhāga</i>). And whatever has direction-parts must be impermanent (<i>wuchang</i> 無常; <i>anitya</i>).</p>
<p>若言極微遍體和合、無方分者，此亦不然。何以故？</p>	<p>If one claims that atoms form connections by complete overlap (<i>bianti</i> 遍體; <i>sarvātmanā</i>) [with each other], and hence lack direction-parts, [Dharmapāla's refutation:] then this is not logical, either. Why?</p>
<p>頌曰：</p>	<p>[Āryadeva] presents the following] stanza: <i>The attributes (xiang 相; lakṣaṇa) of smallness and</i></p>

³⁶ T2800:85.799c14-17.

<p>在因微、圓相 於果則非有 是故諸極微 非遍體和合 (I.13)</p>	<p><i>roundness that exist in the cause do not exist in the effect;</i> <i>Hence atoms do not form connections by complete overlap</i> (I.13)</p>
<p>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。</p>	<p>Comment: If [as the opponents claim] atoms form connections by complete overlap, then since atoms lack direction-parts, it is <i>not</i> the case that merely parts of the atoms contact each other (<i>shaofen he</i> 少分合) [in the accumulation]. Hence each atom [in the accumulation] should occupy the same location. The substantially-real effect (<i>shiguo</i> 實果) would then be in complete overlap with its own cause because there would be no other location [it could occupy], and it should also be minute and round.</p>
<p>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。</p>	<p>[Dharmapāla criticizes:] In that case, then you should allow that all categories (<i>juyi</i> 句義; <i>padārtha</i>) fall beyond the scope of cognitive objects for the sense organs, because, if one perceives that the basis (<i>suoyi</i> 所依)³⁷ [falls beyond the scope of cognitive objects for the sense organs], then he knows that the remaining [categories (<i>padārtha</i>) also fall beyond the scope of cognitive objects for the sense organs].³⁸ Therefore, [the opponents] contravene both common sense and their own thesis (<i>zizong</i> 自宗; <i>sva-pakṣa</i>?).</p>

³⁷ By “basis” I think Dharmapāla refers to substantially-real entities (*dravya*), i.e., atoms in this context.

³⁸ 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 accumulation₂ in different locations, or accumulate via complete overlap in the same location. The unwanted consequence for the former is that atoms would evince extension and hence would be impermanent. The unwanted consequence for the latter 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 Kāśmīrakās say that atoms do not contact each other, because if an atom contacts another by complete overlap, then the fault would follow that “substantially-real entities would become mixed (*miśrī-√bhū*)”; but if an atom contacts 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 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 Viṃ: whatever has direction-

³⁹ Cf. above footnote 28.

⁴⁰ Cf. Lévi 7 and Tola and Dragonetti 143.

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 “category” (*padārtha*).

It must be noted here that, in contrast with Vasubandhu’s earlier account, in DGS, Dharmapāla is at some pains to distinguish between accumulation₂ (first theory) and accumulation₃ (second set of theories), and elaborate refutations respectively. In Section 2 below, when Dharmapāla treats the second theory, he states explicitly that, on that theory, atoms do not contact each other. For this reason, here we must interpret the Vaiśeṣika position as holding that atoms form an accumulation₂. 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:

<p>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</p>	<p>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 (<i>de</i> 德; <i>guṇa</i>) of</p>
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<p>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。</p>	<p>magnitude (<i>liang</i> 量; <i>parimāṇa</i>),⁴¹ 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 (<i>shusheng</i> 殊勝; <i>viśiṣṭa</i>) addition of the quality of magnitude, the substantially-real [entity] which [serve as its] basis (<i>suoyi shi</i> 所依實), despite not being large, seems (<i>si</i> 似) to be large, and its differentiation in direction-parts can be seen distinctly.</p>
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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 (*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

⁴¹ “Magnitude” (*parimāṇa*) is one among the 24 qualities (*guṇa*) according to 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)

expression and cognition, namely, '[This is] small' is smallness.

Largeness: 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: Shortness: That whose material cause is a diad, 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.⁴²

⁴² Quoted from Miyamoto 12-13. Xuanzang's Chinese translation reads: 「量」云何？謂微

That is to say: although the accumulation of atoms *qua* effect occupies the same location with 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 being large.

1.3. Dharmapāla's Refutation again

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，	Since the substantially-real effect thus produced has no separate location from those atoms, it should fall beyond the scope

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.

汝不能救何事餘言。	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 should efface its substance and become the same with that which is based upon that (<i>nengyi</i> 能依; i.e., the qualities 德). Now that it is established that [it has] the attributes of something else [i.e., the qualities], its own attribute [<i>svalakṣaṇa</i> ? i.e., being a substantially-real entity] should be discarded.
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 (<i>podijia</i> 頗胝迦; <i>sphaṭika</i>), which appears to have the attributes of something else without discarding 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] should discard [their state of being] 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 ⁴³ 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	Qualities (<i>de</i> 德; <i>guṇa</i>) are based upon substantially-real entities (<i>shi</i> 實; <i>dravya</i>). If there is no substantially-real entity, then qualities also do not exist. If neither 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

⁴³ Read “可不” as “不可。”

<p>越根境，此亦違汝自所立宗。</p>	<p>else without discarding 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 (<i>shixing</i> 實性; <i>dravyatā</i>?) fall beyond the scope of cognitive objects for the sense organs. This would also violate the thesis postulated by you [the opponents].</p>
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Dharmapāla proceeds to refute the foregoing theory about “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 should discard its own, original 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 previous inherent attribute. Dharmapāla rejects this example by pointing to the difference between crystal and an atom. Crystal, according to him, has a substance that is impermanent, but atoms as substantially-real entities are permanent according to the opponent.⁴⁴ Hence Dharmapāla claims that if, like crystal,

⁴⁴ I think that a difficulty emerges here in Dharmapāla’s argument. The opponents claim that crystal can appear with both its own attribute and the attributes of something else. But this does not necessarily imply the crystal changes its nature of being crystal. How would Dharmapāla prove that the substance of crystal is impermanent?

atoms are impermanent, then, atoms would not qualify as substantially-real entities (*dravya*).

(1b) Granted (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 must be grounded in substantially-real entities, without a substantially-real entity, upon which 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 the 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 it should discard its own attribute of smallness together with its nature of being a substantially-real entity. 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 upon what could the attribute of largeness be grounded?

Dharmapāla concludes: Hence, 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: Accumulation₃

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 accumulation₃ of atoms, i.e., an accumulation without physical contact. In what follows, Dharmapāla cites two versions of accumulation₃ in his DGS.

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 shape and matter (<i>xingzhi</i> 形質), and that atoms mutually obstruct each other, and for these reasons they occupy different locations.
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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 that for the former the effect is permanent; while for the latter, the effect is impermanent.⁴⁵

⁴⁵ 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，

2.1.1. Dharmapāla's Refutation

<p>2.1.1. 是則極微住雖隣次而處各別，應不和合。</p> <p>若許和合處同、不同，即違自執、及有分過。</p>	<p>2.1.1. [Dharmapāla's refutation:] In that case, then since atoms dwell next to each other but in different locations, they should not form any connection.</p> <p>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 assumption⁴⁶ or (b) commit the fallacy of holding that atoms have parts (<i>fen</i> 分; <i>bhāga</i>).</p>
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Dharmapāla's objection is that under the opponents' theory that atoms do not contact, they cannot form any connection. And if the opponents want to insist that atoms do form connections, then they would commit a fallacy 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.⁴⁷

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)

⁴⁶ That is, your own assumption 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)

⁴⁷ 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

2.2. Atoms Form an Accumulation₃: Post-AKBh Vaibhāṣikās

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 Vaibhāṣikās.⁴⁸ Since this theory holds that atoms form an accumulation₃, 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 Kāśmīravaibhāṣikās developed this theory after AKBh and then Vasubandhu attempted to refute it in his Viṃ but with no success. In his DGS, Dharmapāla takes up the task of refuting this realist theory, in the following passage.

<p>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。</p> <p>為兼破彼，故復頌曰：</p>	<p>Some [masters] claim: atoms come into existence in different locations. Although there is nothing in between them (<i>wujian</i> 無間; <i>nirantara</i>), they do not contact (<i>chu</i> 觸; <i>sparsa</i>) each other. Each of them occupies a [separate] location and dwells while avoiding each other. Because they differ [spatially] in their aggregation (<i>jiji</i> 積集; i.e., an accumulation₃), they appear (<i>si</i> 似) to have direction-parts. Because they come into existence [in a location with] no interval [between it and the previous location],</p>
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(宗)，在一處故(因)，如一因微自望已體(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)

⁴⁸ 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)

	<p>they appear to undergo development. The atom in the succeeding moment forms a continuum (<i>xiangxu</i> 相續; <i>saṃtāna</i>) with the atom in the preceding moment. [In this way, the accumulation₃ thus formed] has its causes and effects and is neither non-existent (<i>duan</i> 斷; <i>uccheda</i>?) nor permanent.⁴⁹</p> <p>For the sake of refuting this claim [of Vaibhāṣika] together with that [claim held by the Vaiśeṣika], [Āryadeva] presents the following stanza:</p>
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The crux of this position is that atoms come into existence in different locations. There is no contact (*chu* 觸; *sparsā*) between them, but neither is there any interval (*wujian* 無間; *nirantara*) between them. Both the idea of “no contact” and the idea of “nothing in between” are crucial here. “No contact” avoids the unwanted consequence of each atom “having direction-parts”; “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 accumulation₃ 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 contact each other, then how could there be *nothing* in between, since there must be empty space in between? We are left with a

⁴⁹ 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.

conundrum. Here Shentai 神泰 (d.u.; active during 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.⁵⁰

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 (*varṇa*) (cf. *Abhidharmakośa* stanza I.10). This space-realm is also termed “close to *agha*” (*agha-sāmantaka*). Interestingly, AKBh supplies two somewhat discordant definitions for “*agha*”: the first being “extremely capable of striking or of being struck,” referring to solid, agglomerated matter; and the other being “free from striking,” referring to empty space (*ākāśa*).⁵¹ 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 “no interval” 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.

⁵⁰ 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).

⁵¹ AKBh 18.15-18. Also Cf. Pruden, Vol. 1: 88-89.

2.2.1. Dharmapāla's refutation

<p>於一極微處 既不許有餘 是故亦不應 許因果等量 (I.14)</p> <p>論曰：如是所說諸極微相 竟不能遮有方分失。</p>	<p><i>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)</i></p> <p>[Dharmapāla]: The attributes (<i>xiang</i> 相; <i>lakṣaṇa</i>) of atoms as characterized above [by the opponents] cannot even evade (<i>zhe</i> 遮) the fallacy of having direction-parts [for the atoms].</p>
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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 a few steps. First, shadows imply direction-parts. Second, movement implies direction-parts. Third, "no direction-parts" implies invisibility.

2.2.1.1. Shadows Imply Direction-parts of Atoms;

<p>何以故？頌曰： <u>微若有東方 必有東方分</u> 52 <u>極微若有分 如何是極微</u> (I.15)</p>	<p>Why? [Āryadeva] presents the following stanza:</p> <p><i>If an atom has an easterly direction, then that atom must have an eastern direction-part.</i></p> <p><i>But if an atom has a part, then how could it be an atom?(I.15)</i></p> <p>[Dharmapāla:] Since atoms can obstruct, then when the sun has only just risen and the light it releases touches [the atom], the</p>
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⁵² 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)

<p>論曰：是諸極微既有質礙，日輪纒舉舒光觸時，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。</p> <p>既有方分便失極微，如是極微即可分析，應如麤物非實、非常，違汝論宗「極微無方分、常住、實有，造世間萬物」。</p>	<p>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.</p> <p>If an atom has direction-parts, then it would cease to be an atom. Such an atom can be disaggregated and should not be substantially-real (<i>dravya-sat</i>) nor permanent, like a gross object (<i>cūwu</i> 麤物; <i>audārika</i>). This would go against your own assumption, namely: “Atoms have no direction-parts; they are permanent and are substantially-real; they constitute all entities in this world.”</p>
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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 katha vā | (Viṃ 14c)

*yady ekaikasya paramāṇor digbhāgabhedo na syād ādityodaye katham
anyatra chāyā bhavaty anyatrātaḥ | na hi tasyānyaḥ pradeśo 'sti
yatrātapo na syāt* | (Lévi 7)⁵³

⁵³ Tola and Dragonetti’s English translation reads: “Or how the shadow and the obstruction [could be possible]? (14c) If there were not for each atom a division according to the sections of the space, [then] when the sun rises, how could it be shadow in one place [of the atom][and] light in another? For there would not be in it [=the atom] a place in which there would not be

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 accumulation₃ 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.⁵⁴ 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.⁵⁵

light." (Tola and Dragonetti 144)

⁵⁴ If we adopt Shentai's idea that there is space-element (*ākāśa-dhātu*) between the atoms in an accumulation₃, 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.

⁵⁵ Tola and Dragonetti's English translation reads: "Why not to accept that the shadow and the obstruction belong both of them to the mass (*piṇḍa*) [of atoms], not to the [isolated] atom? Is it accepted that there is different from the atoms a mass [of atoms] to which both [=the shadow and the obstruction] would belong? [The opponent answers:] "No." *If the mass [of atoms] is not different, [from the atoms of which it is composed], [then] they [=the shadow*

2.2.1.2. Movement Implies Direction-parts of Atoms

<p>復次，所執極微定有方分，行所依故，如能行者。</p> <p>凡所遊行必有方分，若無方分則無所行。何以故？頌曰。</p>	<p>Furthermore, [Dharmapāla criticizes:] [thesis:] The atoms as held [by the opponents] must have direction-parts, [reason:] because they are the basis for movement (<i>xing</i> 行; <i>gati</i>?), [example:] like those which move.⁵⁶</p> <p>Whatever moves must have direction-parts. If something has no direction-parts, then it does not move. Why? [Āryadeva] presents the following stanza:</p>
<p><u>要取前捨後 方得說為行</u> (I.16ab)</p> <p>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，</p>	<p><i>Only when something takes up [the position] before it and leaves [the position] behind it can it be said to be moving. (I.16ab)</i></p> <p>[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] is behind it.” The functions of taking up and leaving can arise only in dependence upon differences in direction-parts [such</p>

and the obstruction] Cannot belong to it [=the mass] (14d) If it is accepted that the mass [of atoms] is not different from the atoms [of which it is composed and which do not admit either shadow or obstruction], [then] it is [also] established that both of them [=the shadow and the obstruction] do not belong to it [=the mass]. This [mass] is a [mere] imagination of aggregate.” (Tola and Dragonetti 145)

⁵⁶ 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)

<p>極微既是行用所依，故知極微定有方分。</p> <p>若無所行、行用差別，是則應撥行者為無。</p>	<p>as those] between front and back, and only thus can this qualify as “movement.” There is no such thing as movement apart from direction-parts. Given that atoms are the basis (<i>suoyi</i> 所依; <i>āśraya?</i>) for the function of motion, we know that atoms must have direction-parts.</p> <p>If one does not allow distinctions with respect to “the location to which one moves” and with respect to “the function of motion”⁵⁷, then one should deny the existence of things that move.</p>
<p>故說頌曰：</p> <p>此二若是無 行者應非有 (I.16cd)</p> <p>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。</p>	<p>Hence [Āryadeva] presents the following stanza:</p> <p><i>If these two</i> (i.e., the distinctions with respect to the “location to which one moves” and with respect to the “function of motion”) <i>do not exist, then a mover would not exist. (I.16cd)</i></p> <p>[Dharmapāla:] Only in dependence upon locations in front and behind can there arise the functions of taking up and leaving. If there were no [difference] in location, then the above function would not exist. In that case, then 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., a thing that moves, would not exist, either. If one holds atoms to be thus, then one is wedded to false views.</p>

⁵⁷ 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)

<p>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？</p>	<p>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 (<i>tianyan</i> 天眼; <i>divyacakṣus</i>) could not see [the effect]. That being so, then all the categories (<i>padārtha</i>) 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 categories?</p>
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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*).⁵⁸ But here Dharmapāla argues that if atoms have no direction-parts, then all movement would not impossible.

2.2.1.3 No Extension Means No Visibility.

<p>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。</p> <p><u>極微無初分 中、後分亦</u></p>	<p>Furthermore, if, as [the opponents] claim, atoms have no front, middle and back, then even one with a purified eye could not see them. But in that case, they would be non-existent, like flowers in the sky (<i>konghua</i> 空花; <i>khapuṣpa</i>). In order to demonstrate this point, [Āryadeva] presents the following stanza:</p>
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⁵⁸ Cf. *Viṃ* stanza 15 and auto-commentary.

<p>無</p> <p>是則一切眼 皆所不能見</p> <p>(I.17)</p> <p>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、他推檢都不可得，是故不應計為實有。</p>	<p>[If] <i>Atoms do not have front, middle nor back parts, then they could not be seen by any kind of eyes. (I.17)</i></p> <p>[Dharmapāla] If [the opponents] hold that atoms are permanent and simple (<i>eka</i>) [i.e., without proper parts], namely, lacking the three temporal aspects, namely coming into existence, enduring, and going out of existence, and lacking the three spatial aspects, namely front, middle and back, then those atoms would not be substantially-real entities (<i>shiwu</i> 實物; <i>dravya</i>) 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 <i>via</i> inference-for-oneself nor <i>via</i> inference-for-others (<i>zita tuijian</i> 自他推檢; <i>svārtha-parārthānumāna</i>), and hence they should not be considered as substantially-real (<i>shiyou</i> 實有; <i>dravya-sat</i>).</p>
<p>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。</p>	<p>Here [Āryadeva] has his main purpose in refuting what is held by non-Buddhists, namely, the view that “atoms are permanent, without extension, exceeding 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.</p>

Finally, if atoms have no direction-parts, then they would not be visible and hence should 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.⁵⁹

3.1. With Respect to Effects:

<p>復次，為破極微因果同處、及顯因體定是無常，故說頌曰：</p> <p>若因為果壞 是因即非常</p> <p>或許果與因 二體不同處(I.18)</p>	<p>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 (<i>yinti</i> 因體) must be impermanent, [Āryadeva] presents the following stanza:</p> <p><i>If the cause is destroyed by the effect, then the cause is not permanent;</i></p> <p><i>Or [if not, then one must] allow that the cause and the effect do not occupy the same location. (I.18)</i></p>
<p>論曰：諸有礙物餘礙逼時，若不移處必當變</p>	<p>[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</p>

⁵⁹ 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)

<p>壞。如是極微果所侵逼，或相受入、異體同居，如以細流溉麤沙聚；或復入中令其轉變，如妙藥汁注赤鎔銅。</p> <p>若許如前則有諸分，既相受入，諸分支離。如相離物不共生果，是則應無一切麤物。又若同彼，有諸細分，即應如彼體是無常。</p>	<p>impinges upon [the cause], either it (the cause) must assimilate the other [the effect] and both bodies, while distinct, become coextensive, 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.</p> <p>If you allow the former alternative [namely, that atoms penetrate into each other], then [it follows that] atoms have parts (<i>fen</i> 分; <i>bhāga</i>). [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 (<i>cūwu</i> 麤物; <i>audārika</i>) [as the effect]. Moreover, [if the case is] like that [i.e., the first alternative], then since [what is infused] has tiny parts, then atoms should be like that, namely, be impermanent.</p>
<p>若許如後，自說極微體有變壞，何待徵難？</p>	<p>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?</p>

Dharmapāla argues that there are only three options when an atom meets another. Either (3.1.1.) atom_a and atom_b dwell together 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:

<p>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。</p>	<p>If you allow neither [of the above] alternatives, then you must allow [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.⁶⁰</p>
<p>又說頌曰： <u>不見有諸法 常而是有對</u> <u>故極微是常 諸佛未曾說(I.19)</u></p>	<p>Furthermore, [Āryadeva] presents the following stanza: <i>No dharmas that are permanent can also be impenetrable (youdui 有對; pratigha).</i>⁶¹ <i>Hence the Buddhas never claim that atoms are permanent. (I.19)</i></p>
<p>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，</p>	<p>[Dharmapāla:] It is patently apparent that things like stone, etc., occupy their own locations, and also offers resistance to (<i>duiai</i> 對礙) other things. Granted that these things are impermanent, so too are the atoms. How could they be permanent? [The attribute of]</p>

⁶⁰ 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)

⁶¹ Here in the stanza and the commentary, the two notions *youdui* 有對 (impenetrable; *pratigha? sa-pratigha*) and *youai* 有礙 (obstructing; *pratibandha*) seem to be treated as synonymous. Cf. Hirakawa, Vol. II: 37 and 34.

二法同體，理所不然。	impenetrability/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.
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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 offers resistance to other objects, they cannot be permanent. The underlying assumption here is that if something can obstruct, then it must have direction-parts and hence cannot be permanent.

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

Conclusion

In this paper, I give 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 Kāśmīravaibhāṣikās and seeks to refute it, and for this reason we must assume that the Kāśmīravaibhāṣikās hold that atoms can form an accumulation₃, 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 *Kāśmīravaibhāṣikās*. However, I have also argued that Vasubandhu's refutation of this position in stanza 13 fails. For this reason, we must conclude that the refutation of the accumulation of atoms in *Viṃ* is not successful. This explains, at least in part, why Dignāga felt the need to redesign his refutation of realism in *ĀP*.

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