Aristotle's *Dunamis* Transformed: On Avicenna's Conception of Natural *Istiʿdād* and *Tahayyu'*

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Abstract: Avicennan theory of isti'dād and tahayyu' is one of the most important components of Avicenna's natural philosophy and this theory achieves important revisions on Aristotelian conception of *dunamis*, but up to now received little attention in the secondary literature. In order to arrive at a correct understanding of Avicenna's theory of isti'dād, this article analyzes the aforementioned concepts in relation to the division of *essential possibility* and *possibility in the form of propensity* and tries to find an answer to the question "what types of transformations the concept have undergone in comparison to the Aristotelian *dunamis*?". In this context, questions on whether the usage of the terms isti'dād and tahayyu', which cannot be found in Greek-Arabic translations of Aristotle's texts, points to a simple passage to a new scientific terminology or there occurred a new conceptual framework and it forced introduction of such a new vocabulary are discussed in comparison to Aristotle's division of *dunamis-heksis*, Alexander of Aphrodisias' theory of natural powers and eventually Simplicius' and Philoponus' Neoplatonic conception of *epitêdeiotês*.

Keywords: Avicenna, potentiality and actuality, natural powers, isti'dād, tahayyu', Aristotle, *dunamis*, *heksis*, *epitêdeiotês*.

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T he conceptual transformations in the Aristotelian concept of possibility (*to dunaton*) in Avicennan philosophy, particularly in the context of the discussions of necessity and possibility and in terms of the problem of modalities, have been widely discussed in the current scholarship on Avicenna.[1] In this article I will focus on an Avicennan transformation of the Aristotelian theory of potentiality (*dunamis*) in respect to substantial generation. In doing so, I seek to show that Aristotle's *dunamis* underwent an important transformation in the Avicennan theory of isti'dād (propensity) and to analyze this transformation in comparision to the terminological interventions of such Aristotelian commentators as Alexander of Aphrodisias (c. 200) or such Neoplatonist commentators as Philoponus (c. 490-570) and Simplicius (sixth century bc.). Thus, the goal of this study is to acquire a correct understanding of the Avicennan conceptions of isti'dād and *tahayyu*' and to compare the transformations which these new concepts created in Aristotle's *dunamis* with Avicenna's Greek antecedents who studied the same term: *dunamis*.[2]

In order to achieve a correct understanding of Avicenna's theory of isti'dād and to value it in its special context, one should first seek answers to these questions: Are his concepts of isti'dād and *tahayyu*' merely explanatory and parasitic terms to Aristotle's *dunamis*, as Owen and Todd[3] claim for Philoponus' usage of *epitêdeiotês*?

1   See Robert Wisnovsky, *Avicenna's Metaphysics in Context*, (Ithaca, New York: Cornell University Press, 2003), 197-219, 245-265; Allan Bäck, "Avicenna on Existence", *Journal of the History of Philosophy*, XXV/3 (1987): 351-67; Allan Bäck, "Avicenna's Conception of Modalities", *Vivarium* 30/2 (1992): 217-255; M. Cüneyt Kaya, *Varlık ve İmkân, Aristoteles'ten İbn Sînâ'ya İmkânın Tarihi* (İstanbul: Klasik Yayınları, 2011), 33-75, 159-255 as a few examples to these studies.

2   Avicenan theory of natural isti'dād was mostly studied indirectly regarding the problems such as final causality, spontaneous generation and the causation of similar to another simile. See Robert Wisnovsky, "Avicenna on Final Causality" (PhD, Princeton University, 1994), 85-92; Dag Nikolaus Hasse, "Spontaneous Generation and the Ontology of Forms in Greek, Arabic, and Medieval Latin Sources", *Classical Arabic Philosophy: Sources and Reception*, ed. Peter Adamson (London-Turin: The Warburg Institute, 2007), 150-175, esp 155-58; Philipp W. Rosemann, *Omne Agens Agit Sibi Simile, A "Repetition" of Scholastic Metaphysics* (Leuven: Leuven University Press, 1996), 159-187. With the exception of Wisnovsky's description, among the various researches which I listed a few of them, there is none that discusses isti'dād as an independent research topic. The rareness of studies on natural isti'dād is related to relatively small interest on Avicenna's natural philosophy and may also be related to the fact that studies on his notion of potentiality mainly focus on his division of necessity and possibility, as this is one of the most characteristic features of his philosophy. However, the central role of the mentioned division, i.e. necessity and possibility, can only be understood clearly when the Avicennan transformations on the subdivisions of potentiality and actuality are presented.

3   See Gwilym Ellis Lane Owen, "Commentary", *Scientific Change: Symposium on the History of Science, University of Oxford, 10-15 July 1962*, ed. Alistair Cameron Crombie (London: Heinemann, 1962), 93-102, esp. 97-98; Robert B. Todd, "*Epitedeiotes* in Philosophical Literature: Towards an Analysis", *Acta Classica* 15 (1972): 25-35. Sambursky, in contrast to Owen ve Todd, reports that Philoponus' *epitêdeiotês* is an alternative concept to Aristotelian *dunamis*. See, Samuel Sambursky, *Physical World of Late Antiquity*

Or, is it merely a "repetition of Aristotle's theory of *dunamis-heksis*, as we observe in the case of Alexander of Aphrodisias' conception of *heksis*? If Avicenna's usage is neither, then is it an alternative to Aristotle's *dunamis*, as we see in the Neoplatonist usage of *epitêdeiotês* (natural propensity or fitness) in the sense of Plotinian *dunamis ateles* (incomplete potentiality)? If we regard it as not only a terminologically but also a conceptually new term, then what are the motives behind Avicenna's usage of it and how is this new usage similar to and different from the Aristotelian and Neoplatonic theories of potentiality?

In order to answer these questions, in this article I will present how the aforementioned terms were used by Avicenna's Greek antecedents and how these usages were transmitted to Avicenna through Greek-Arabic translations, and finally how he reinterpreted this terminology with a new conceptual framework peculiar to him.

1.1 The Two Kinds of Power in Aristotle: *Dunamis* and *Heksis*

Avicenna defines potentiality in the meaning of *istiʿdād* and *tahayyu'* as a perfect preparedness toward actuality and differentiates this from *quwwa* (potentiality), which means equal capacity to contrary forms.[4] Although it is difficult to find any direct correspondence to *istiʿdād* and *tahayyu'* in Aristotle's texts, Avicenna's distinction of *quwwa* and *istiʿdād* still reaches up to the passages where Aristotle differentiates between *dunamis* and *heksis*, in terms of textual genealogy and at first sight, Avicenna's distinction even seems to reflect Aristotle's. In essence, I neither intend to present a philological analysis nor to build my arguments on the transformations of *dunamis* on this kind of analysis. However, the usages of these terms, as well as the forms in which they are transmitted into Arabic, are very helpful when it comes to detecting the path toward the Avicennan usage of *istiʿdād* and *tahayyu'*.

(London: Routledge and Kegan Paul, 1962), 99-122; Samuel Sambursky, "Conceptual Developments and Modes of Explanation in Later Greek Scientific Thought", *Scientific Change: Symposium on the History of Science, University of Oxford, 10-15 July 1962*, ed. Alistair C. Crombie (London: Heinemann, 1962), 61-79, esp. 73-74.

4   For Avicenna's definitions of *istiʿdād*, see Ibn Sīnā, *al-Shifā/al-Kawn wa al-fasād*, ed. Maḥmūd Qāsim (Cairo, 1965), 191; Ibn Sīnā, *Dānishnāma-i ʿAlāī/İlāhiyyāt*, ed. M. Muʿīn (Tahran: Silsile-i İntishārāt-i Anjuman-i āthār-ı Millī, 1951), 159-160; Ibn Sīnā, "Kitābu Adwiyat al-qalbiyya", in *Min Muallafāti Ibn Sīnā al-ṭibbiyya*, ed. Muhammed Zuhayr al-Bābā (Dimashq: Manshūrātu maʿhad al-turāth al-ʿilmī al-ʿarabī, 1983), 226-227; Ibn Sīnā, *al-Shifā /Ilāhiyyāt*, ed. G. Qunavātī, S. Zāyed (Cairo, 1960), 411,5-16; Ibn Sīnā, *al-Shifā/al-Samāʿ al-ṭabīʿī*, ed. S. Zāyed (Cairo, 1983), 14,4-9.

Aristotle distinguishes between two types of potentiality and actuality in *De Anima* II.5:

> We must now distinguish different senses in which things can be said to be potential or actual (…) We can speak of something as a knower either as when we say that man is a knower, meaning that man falls within the class of beings that know (= *dhawāt al-'ilm*) or have knowledge (= *yattakhidhu al-'ilm*). Or as when we are speaking of a man who possesses a knowledge of grammar (*yuḥassin al-naḥw*); each of these has a potentiality, but not in the same way. The one because of his kind or matter is such and such, the other because he can reflect when he wants to, if nothing external prevents him. And there is the man who is already reflecting, – he is a knower in actuality and in the most proper sense is knowing, e.g. this A. Both of them are potential knowers. However one of them changed (*istaḥāla*) and transited (*intaqala*) from one state to its opposite. And in the other one is the possession of prior knowledge (*wa al-ākharu fīhi jiddat al-'ilm*).[5]

In parallel with Avicenna's division of rational propensity, as we will see below, knowledge is the first potentiality in the sense that all humans have the capacity to know. Thus they are called potentially knowers. The second potentiality expresses the state of humans who have the capacity to know one type of knowledge, such as the knowledge of grammar, but do not use it at that moment. In this regard, both the student who does not know grammar but is sitting in a class in order to learn it, and the teacher who is sitting in her chair and reading a newspaper while waiting for her students to arrive, are said to have the knowledge of grammar potentially. On the other hand, Aristotle compares the student's potentiality to prime matter's potentiality to receive contrary forms and names it *dunamis*. He names the potentiality of the already-knowing teacher who is not thinking right now *heksis*. He acknowledges two types of actualities for these two types of potentialities: (1) The actuality of the first potentiality (*dunamis*) is the transition from the case of ignorance into being knowledgeable and (2) the actuality of the second potentiality (*heksis*) is the transition from the state of unthinking into thinking.[6] Aristotle upholds *De Anima*'s division of potentiality-actuality in *Physics* VIII.4:

5   Arisṭūṭālīs, *Fī al-nafs*, ed. Abd al-Raḥmān Badawī (Quwait: Wakālat al-Maṭbuāt, 1980), 42,22-31. cf. Aristotle, *On the Soul*, ed. Jonathan Barnes, tr. J. A. Smith (Princeton: Princeton University Press, 1991), 417a22-417b1.

6   For the contemporary discussions about the kinds of transitions from potentiality to actuality in *De Anima* II.5 see: Myles Burnyeat, "*De Anima* II 5", *Phronesis* 47/1 (2002): 28-90; Richard Sorabji, "Intentionality and Physiological Processes: Aristotle's Theory of Sense Perception",in *Essays on Aristotle's De Anima*, ed. Martha C. Nussbaum ve Amélie Oksenberg Rorty (Oxford: Clarendon Press, 1995), 195-225; Robert Heinaman, "Actuality, Potentiality and *De Anima* II.5", *Phronesis* 52 (2007): 139-187; John Bowin, "Aristotle on Various Types of Alteration in *De Anima* II 5", *Phronesis* 56 (2011): 138-161; John Bowin, "Aristotle on 'First Transitions' in *De Anima* II 5", *Apeiron* 45/3 (2012): 262-282.

Someone who learns some knowledge knows in a potentiality different from someone who possesses some knowledge without being in actuality. When the agent and the acted upon come together, the potential will always become actual. Thus the person who is in potentiality and learns will differ in terms of potentiality from the other person [who already possesses that knowledge but is not thinking right at that moment]. This is because there is a difference between the potential knowledge of the knower at the time of her not knowing and learning it and the potential knowledge of a person who has knowledge but is not thinking of that knowledge at the time after knowing it. In the second case, when there is no external obstacle (*mā lam yamnaʿhu aw yaʿuqhuʿāiq*), she can think of that knowledge actually. If she could not think, that would make him a not-knowing agent, although he is knowledgeable; this is contradictory. And these things are similar also with natural entities (*wa kadhālika yajrī al-amru fī al-umūr al-ṭabīʿiyyati*). In this respect, a cold thing potentially exists in a hot thing. When it [the cold thing] has changed, it becomes potential in the fire and this [fire] will burn as long as nothing hinders it. This is the case for light and heavy as well. Like your saying "air comes to be from water," sometimes [light] comes to be from heavy – for this is first potentially – and [after change] it becomes light and as long as nothing hinders it, actually realizes its own actuality.[7]

The schema in *De Anima* developed for the intellectual powers for potentiality and actuality is carried here to the realm of natural powers. In reference to *heksis* in the sense of the second potentiality, Aristotle's words "and these things are similar also with natural entities" find similarities between natural powers and second potentiality. Accordingly, "as long as nothing hinders it," at the state of the second potentiality the natural powers will "necessarily" become actualized. As a result, Aristotle says that when the necessary conditions are met and after it undergoes specified transformations, then the cold object will transform from its first potentiality into its second potentiality and will immediately possess the *heksis* of heat. As this *heksis* is a natural power, independent of will – that is going to decide whether it will happen or not –; it directly and necessarily becomes actualized.[8]

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7   Arisṭūṭālīs, *al-Ṭabīʿa*, ed. Abd al-Raḥmān Badawī (Cairo: al-Hayʾat al-Miṣriyya al-ʿamma, 1983), 839,9-840,9; cf. Aristotle, *Physics*, ed. Jonathan Barnes, tr. R. P. Hardie and R. K. Gaye (Princeton: Princeton University Press, 1991), 255a30-b23.

8   The most explicit statement of Aristotle, that when agent and patient comes together the act will necessarily emerge, is found in *Metaphysics*, 1048a6-20: "As regard potentialities of the latter kind [i.e. non-rational powers], when the agent and the patient meet in the way appropriate to the potentiality in question, the one must act and the other be acted on (= *fa-muḍṭarrun an-yafʿala baʿḍuhā wa an-yanfaʿila baʿḍuh*). But with the former kind (i.e. rational powers), this is not necessary. For the non-rational potentialities are produce one effect each, but the rational produces contrary effects, so that they would produce contrary effects at the same time. But this is impossible. That which decides, then, must be something else; I mean by this, desire or choice. (...) Therefore everything that has a rational potentiality, when it desires that for which it has a potentiality and in the circumstances in which it has it, must do this." See Arisṭūṭālīs, "Mā baʿda al-ṭabīʿa II", in *Tafsīru Mā baʿda al-ṭabīʿa*, comm. Ibn Rushd, ed. M. Bouyges (Bairut: Dar al-mashriq, 1990), 1149,1-9. cf. Aristotle, *Metaphysics*, 1048a6-20. For the discussions on what kinds of possibility can be spoken about in terms of the relation between natural powers

In terms of Aristotle's discussions in *De Anima* II.5 and *Physics* VIII.4 about the kinds of potentiality, *dunamis*, as the first potentiality, corresponds the Avicennan *quwwa* or *al-istiʿdād al-muṭlaq*, and *heksis,* as the second potentiality, "resembles" the Avicennan *al-istiʿdād al-kāmil*. Together with this, neither in the passages mentioned above nor in other places where *heksis* is mentioned is the term *heksis* translated as either *istiʿdād* or *tahayyuʾ*. In Isḥāq b. Ḥunayn's translation, the *hekseos* of *De Anima* 417a31 is translated *ḥal* and the *heksein*, which is used in order to describe the state of the second potentiality, is translated as *jiddatun,* a word that gives the meaning of possession, like the word *malaka*.[9] In a second and revised translation of *De Anima,*[10] Isḥāq translated *hekseos* as *ḥal* and *heksein* as *al-malaka*.[11] In the translation of *Cateogories, heksis* remains translated as *malaka*, but *ḥal* is chosen for *diathesis*.[12] In *Book Delta of Metaphysics*, which is Aristotle's philosophical dictionary, *heksis* is translated as *al-hayʾah*, and *diathesis*, which is considered a type of *heksis*, is translated as *alladhī bi al-waḍʿ*.[13] Aristotle uses *heksis* here to express the state of the accidental or substantial actuality emerging as a result of any relation between the agent and the patient. He also draws attention to another and particular meaning of *heksis: diathesis*. He says that the good or the bad positional structure that emerges as a result of the specific positioning of a thing, may also be called *heksi*.[14] In this sense, *heksis* is the *hayʾah* that is the result of the composition of the parts. The goodness or the badness of the composition of a thing would be defined by investigating this situation. Because the pieces in the composition take a position in relation to each other, this *hayʾah* is called *position* (*waḍʿ*/*thesis*) or *dis-position* (*bi al-waḍʿ*/*dia-thesis*).[15]

Both meanings of *heksis* (*al-hayʾah* and *al-waḍʿ*) maintain the relation to the sense of possession that is in the root: *ekhein*. Thus, the possession of *hayʾah* of the

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and actuality, together with their relation to necessity, see: Jaakko Hintikka, *Time and Necessity, Studies in Aristotle's Theory of Modality* (Oxford: Oxford University Press, 1973), 29-41; Cynthia A. Freeland, "Aristotle on Possibilities and Capacities", *Ancient Philosophy* 6 (1986): 69-89.

9   Arisṭūṭālīs, *Fī al-nafs*, 42,18.

10   İbn al-Nadīm, *al-Fihrist*, ed. Ayman Fuad Sayyid (London: Muassat al-furqān li al-thurās al-Islāmī, 2009), I/2, 169,8-10; For the discussions on the first and second manuscripts of *De Anima* and different versions of Ibn al-Isḥaq's translation see: Arisṭūṭālīs, *Fī al-nafs*, preface of the editor, 14-24; Richard M. Frank, "Some Fragments of Isḥāq's Translation of De Anima", *Cahiers de Byrsa* VIII (1958-1959): 231-251; Themistius, *An Arabic Translation of Themistius' Commentary on Aristoteles De anima*, ed. Malcolm Cameron Lyons (Columbia: University of South Carolina Press, 1973), Lyons' preface, VIII-XI.

11   See Themistius, *An Arabic Translation of Themistius*, 80,15-81,3.

12   Arisṭūṭālīs, "al-Maqūlāt", in *Manṭiqu Arisṭū* I, ed. Abd al-Raḥmān Badawī (Quwait: Wakālat al-maṭbūʿāt, 1980), 55,3.

13   Arisṭūṭālīs, "Mā baʿda al-ṭabīʿa II", 638,6-639,2.

14   Arisṭūṭālīs, "Mā baʿda al-ṭabīʿa II", 638,10-12

15   Arisṭūṭālīs, "Mā baʿda al-ṭabīʿa II", 640,8-14.

knowledge that is the product of the grammarian's act of knowing is called *heksis* or *al-malaka*. In contrast to the student who attempts to gain knowledge that she does not possess, the scholar possesses the knowledge of grammar and can bring this knowledge to use actually as she wishes. The striking point about this possession is for us to be able to talk about *heksis* as a second potentiality as in *De Anima* II.V, where is possible when the thing possessed the perfection directed toward it actively at least once.[16] An example can be given: The opportunity that a grammarian has the *heksis* or *malaka* of thinking about a grammar rule is dependent upon the condition that she had thought of that grammatical rule before at least once. Thus, essentially the second meaning of *heksis* – that is *diathesis* –, is conditioned with the first meaning: *energeia* (actuality). Although the immanence of *energia* to *heksis* as "active possession," with regard to psychological qualities in particular, and to virtues in general, might be understood to some degree, it is still vague in regards to emergence of natural substances. As stated above, in *Physics* VIII.4 Aristotle says that the potentiality in natural bodies resemble the second potentiality. Thus when no obstacle is present and conditions are met, the potentiality of natural bodies will immediately become active. Therefore, what is the relationship between the potentiality of a natural body's substantial form and its actuality? For example, does a thing need to possess the form of steam actually at least once for the potentiality (*heksis*) of the steam that will be actualized in the absence of obstacles? The answer to this question is "yes," because *heksis* is a quality that emerges after the actuality. The direct actualization of second potentialities in the sense of natural powers, as occurs in *Metaphysics* 1048a 6-20, is independent of the agency of the will, which has the possibility to postpone the act through medium of rational powers. In other words, "fire burns as long as it is fire." Burning is not dependent upon the will of fire, and thus there is no gap between fire's power of burning and its actual burning of something. Together with this, in order to explain the relation of *dunamis-heksis* and *energia*, we need to analyse Aristotle's words: "In this regard, something cold is potentially hot. Later some change happens and as long as nothing hinders it, it turns into fire and it is burnt." In accordance with this statement, the relation is formulated as follows:

i) The thing that is cold is hot in the sense of first potentiality

ii) it undergoes change with the medium of movement

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16   In *Quaesto* III.3 (also known as *de Sensu*) Alexander of Aphrodisias draws attention to this point. See Alexander of Aphrodisias, *Quaestiones 2.16-3.15*, trs. Robert William Sharples (Ithaca, New York: Cornell University Press, 1994), III.3, 83,21-25. See also Simplicius, *On Aristotle Physics 8.1-5*, tr. István Bodnár, Michael Chase ve Michael Share (London: Bloomsbury, 2012), 1213,33-38.

iii) as a result of this change, heat in potentiality becomes actual and the thing becomes fire; and eventually

iv) the potentiality of fire, which is now actual, becomes identified with fire and, as long as there is no hindrance, it always heats.

There are two necessities in this analysis of generation: (1) necessity in the transition of heat in a cold thing from potentiality to actuality by the effect of motion-giver agent and (2), which is built on (1), the necessity in the transition of the potentiality of heating to actuality when conditions are met and there is no hindrance. Thus, "when conditions are met and when there is no hindrance," it is inevitable that any natural power will become actualized and, once it is actualized, it will remain in the state of actuality as long as it preserves its substantial form.[17]

17   Hintikka gives a perfect description of the relation of these special kinds of powers, understood as powers in comparison to *energeia* – rather than *kinesis* (movement) – , to necessity: "Potentialities of *energeiai* are a special class of potentialities. They *aim at energeiai*, and are instantaneously *realized* through *energeiai*, unlike those potentialities which aim at the outcome of a *kinesis* and are realized gradually through *kinesis*. Since the former potentialities are instantaneously realized, each of them exists only in the form of that *energeia* which is at the same time its end. Thus in the case of *energeiai* we cannot separate (a) a genuine potentiality, (b) the outcome of this potentiality (what it is a potentiality of), and (c) the process through which it is realized." *See:* Jaakko Hintikka, Unto Remes and Simo Knuutila, "Aristotle on Modality and Determinism", *Acta Philosophica Fennica* 29/1 (1977), 66. When they analyse the relation of potentiality and actuality, in terms of the relation of matter and form, as this will cause generation of a natural substance, Kosman and Broadie reach the same conclusion: *See:* Aryeh Kosman, "The Activity of Being in Aristotle's *Metaphysics*", *Unity, Identity and Explanation in Aristotle's Metaphysics*, ed. Theodore Scaltsas, David Charles ve Mary Louise Gill (Oxford: Clarendon Press, 1994), 195-213; Sarah Broadie, "Where is the Activity? An Aristotelian Worry about the Telic Status of *Energeia*", *Being, Nature and Life in Aristotle: Essays in Honor of Allan Gotthelf*, ed. James G. Lennox ve Robert Bolton (Cambridge: Cambridge University Press, 2010), 198-212. Other examples to the approach about the relation of matter-form defended by names such as Sellars, Rorty, Halper, Ackrill, Scaltsas, as well as comparison with opposing approaches, can be found here: Gabriele Galluzzo ve Mauro Mariani, *Aristotle's Metaphysics Book Z: The Contemporary Debate* (Pisa: Edizioni Della Normale, 2006), 89-135. The position mentioned here, which defends necessity in *energeia* as the "activity of being", should not be confused with Megarian notion of necessity. While Megarians claimed that the seer is the only one capable of seeing, they denied that we have any potentiality before we act. The idea of necessity in *energeia*, which refers to Aristotle's transition from possibility in the strict sense to actuality, and the necessity in *energeia*, which means actuality of natural powers, is the necessary actualization of power, which is understood as the immanent inclination toward actuality, when the conditions are met and there is no obstacle. In this regard, when our eyes are shut, we do not see, but we preserve the power to see. When this obstacle is removed and we find an illuminated atmosphere, necessarily the power to see becomes actual and we can see. In a similar way, when the lid of a kettle stops rising due to the boiling water inside, the vapour cannot rise up; however, it preserves its power. Once the lid is opened, this mentioned power actualizes and the vapour rises. Thus we can conclude: If potentiality, as an immanent inclination toward actualizing oneself, is not actualized when the conditions are met, then we cannot call it potentiality. The only exception could be rational powers, which are dependent on the agency of will. Natural powers, in contrast to rational powers, necessarily become actualized when the conditions are met and there is no obstacle. This is the notion of necessity that is attributed to Aristotle. See: Hintikka, *Time and Necessity*, 29-41, 93-113; Hintikka ff., "Aristotle on Modality and Determinism", 35-43, esp. 66-70; Charlotte Witt, "Powers and Possibilities: Aristotle vs. the Megarians", in *Proceedings of the Boston Area Colloquium in Ancient Philosophy XI*, ed. John Cleary and William C. Wians (Lanham: University Press of America, 1995), 249-266.

1.2 *Hexis as al-Quwwa al-Mutahayyia* in Alexander of Aphrodisias

Alexander of Aphrodisias, the great commentator of the Arsitotelian corpus, defines *heksis*, which was the second potentiality in Aristotle, as a type of potentiality that is highly separated from *dunamis*. He also further clarifies the difference between *hekseôs* and *dunamis*. In the Arabic translation of Alexander's *De Sensu* (*Quaestio* III.3), he explains the division of *dunamis* and *heksis* thus:

> When the philosopher completes the discussion and summary of them [i.e., *hekseôs* and *dunamis*], he explained the transition (*al-tanaqqul = metabôle)* from one state into another: The transition from potentiality into actuality is sometimes together and sometimes without transformation (*al-istiḥāla = alloiosis*). He later said: The potentiality, in the sense of disposition (*al-quwwa al-mutahayyia = hekseôs*), transits into actuality without any transformation. This is the second type of power (a*l-quwwa al-kāina min al-naw' al-thānī*). When it does not happen through teaching, it resembles the state of knowledge, because this person knows something without any change (*al-ḥaraka = kineseis*) and transformation. In this case, this version of knowing would not be called change and transformation. Instead, it is another type of transition, one that completes and perfects (*al-mutammim al-mukammil*) the emergence of knowing. The knowledge that emerges as a result of teaching is the first type of potentiality and happens only with change and transformation. This type is called change and transformation (*al-ḥaraka wa al-istiḥāla*). If this is the case, we should say that there are two types of transitions: the first one is from potentiality to disposition *(min al-quwwati il*ā *al-tahyia)*, i.e., toward the disposition for act (*tahyiat al-fi'l*). The second one occurs as a result of transition from disposition to act (*min al-tahyiati ila al-fi'l*).[18]

The terms *hexeis* and *hexeôs* of the *De Sensu* passage clearly express Aristotle's notion of second potentiality. However, with the Arabic translations of these terms as *tahyia* and *al-quwwa al-mutahayyia*,[19] these new terms construct a stronger terminology for second potentiality in Arabic than that of Aristotle's *heksis*.

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18   Iskandar al-Afrūdīsī, "Maqālat al-Iskandar Fī al-ḥiss", *Die arabische Übersetzung der Schrift des Alexander von Aphrodisias über die Sinneswahrnehmung*, ed. Hans-Jochen Ruland (Göttingen, 1978), 178,3-15 (83-95); cf. Alexander of Aphrodisias, *Quaestiones 2.16-3.15*, III.3, 84,20-34. The division of *dunamis-heksis* here is also used for stages of intellectual powers, just as it was in Aristotle. However, when these two terms are strictly used in reference to intellectual powers, *heksis* and its derived versions are translated as *al-malaka* and *bi al-malaka*. See. Iskandar al-Afrūdīsī, "Maqālāt al-Iskandar al-Afrūdīsī fi al-'akl 'alā ra'y Arisṭūṭālīs", in *Commentaires sur Aristote perdus en grec et autres épitres*, ed. Abd al-Raḥmān Badawī (Bairut, 1971), 31-33.

19   For the correspondence of *tahyia* see. Iskandar al-Afrūdīsī, "Maqālat al-Iskandar Fi'l-ḥiss", 178,94; 180,98; 180,101; 180,103. For *mutahayyi'* see: 180,102; 180,104; 180,105. In contrast to use of *tahayyu'* in the translation of *De Sensu* for second potentiality, the term *euphia*, which is used in Themistius' commentary of *De Anima* and translated as *tahayyu'*, and the term *paraskheue*, which is translated as *isti'dād*, indicates first potentiality of prime matter: "What is called substance as *hayūlā* is substance potentially. In this way, it is not yet a thing that can be pointed at in itself. In contrast, it is as if it is a *tahayyu'* (= *euphia*) toward this state and it is *isti'dād* (= *paraskheue*) toward being something determinate. When it comes to the form, form is perfection and as if completer of *tahayyu'*." Themistius, *An Arabic Translation of Themistius*, 43,3-6; cf. Themistius, *On Aristotle On the Soul*, tr. Robert B. Todd (Ithaca: New York, Cornell University Press, 1996), 39,8-10.

In terms of rational powers, Alexander's analysis falls in line with Aristotle's theory of *dunamis-heksis*. However, in order to answer the question of whether this analysis carried into the realm of natural powers or not, we have to apply to Alexander's commentary on Aristotle's *Physics*. Although this commentary is not available today, the curiosity over Alexander's interpretation of the phrase "and these things are similar also with natural entities" and what comes next in *Physics* VIII.4's passage can be silenced by looking at Simplicius' commentary of *Physics*.

Simplicius interprets the abovementioned passage of *Physics*, in accordance with the Aristotelian theory of potentiality and states that the transition from the first potentiality to the second contains change, whereas actuality always together with *heksis*.[20] Following this, he states that he disagrees with Alexander's interpretation of "for this is the first potentially." Simplicius reports that Alexander thinks that the potentiality in these lines refers to an incomplete potentiality (*to dunamei atelês*):

> Alexander understands the clause "for this is first potentially and already light" to refer to the incomplete potentiality, which is heavy according to actuality. "For," he says, "that which is such, and is in such a state that is still heavy in actuality [i.e. water], is light potentially according to what is called first potentiality [i.e. it is air potentially]. Once it has changed, and has become light, it immediately is active with the activity of light." [21]

We do not know whether Alexander used the same terminology as Simplicius did and whether he named the first potentiality, which precedes *tahayyu'*, incomplete potentiality. However, in terms of the coming to be of substantial forms, it is clear that he took the second potentiality in the sense of "perfect or complete potentiality" as *dunamei kata tên heksin* (potentiality in the sense of disposition).[22] Here, Alexander brings *heksis*, as a basic type of potentiality, in the context of explaining the generation of substantial forms. Thanks to this, in addition to the general potentiality (= *al-quwwa*), a new terminological identity is gained in the Arabic translations as *tahayyu'* and *al-quwwa al-mutahayyia*. Here *al-quwwa al-mutahayyia* is used in parallel with Aristotelian *heksis*, and the potentiality of lightness in water "once water has changed" becomes lightness in actuality and turns into the substance of air. *Heksis* emerges together with the actuality and becomes identical with the substantial form. The principle of this substantial form is the first material potentiality in water. This is why the Neoplatonist commentator Simplicius disagrees with Alexander on his commentary of *Physics* 255a30-b24: "for this is first potentially." When both Aristotle and Alexander admit that air comes

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20   Simplicius, *On Aristotle Physics 8.1-5*, 1215,5-16.
21   Simplicius, *On Aristotle Physics 8.1-5*, 1215-27-30.
22   Simplicius, *On Aristotle Physics 8.1-5*, 1215,34.

to be from water, because water is first potentially, they mean that air comes to be from water because the principle of air in actuality is in the first potentiality that precedes it and is in water. Thus, it is in the material nature itself. Simplicius does not agree. According to him, the "first" in "this is first potentially" does not indicate the order of coming to be, in which the incomplete potentiality is always first. Instead, because potentiality, in the sense of disposition (*dunamei kata tên heksin*), is more complete and perfect than the first potentiality in the sense of suitability (*epitêdeiotes*), it refers to completeness and perfection. Thus, here "first" indicates superiority and priority in rank, not in order.[23] Why a competent commentator like Simplicius inserted a forced interpretation at first sight, instead of Alexander's more harmonious reading of Aristotle's text can be understood by investigating the Neoplatonist approach, which resulted in Aristotle's *dunamis* undergoing some important transformations from various aspects. We will examine these in the next section. In addition, before dealing with the Neoplatonist theory of *epitêdeiotês-heksis,* I will summarize Alexander's contribution to Aristotle's *heksis* together with the questions handed down to subsequent generations of commentators.

In respect to the Arabic translations of *heksis* and its derivations, one can say that the appearance of such translations as *tahayyu', mutahayyi',* and *al-quwwa al-mutahayyia* for Aristotle's second potentiality are not due to Aristotle's usage of *heksis*, but to translations of Alexander's usage. However, despite this new and sophisticated Arabic terminology, Alexander's usage of *heksis*, as in Aristotle, indicates nothing more than the proximity of potentiality to actuality. In terms of natural powers, the proximity of the second potentiality does not indicate a potentiality that precedes actuality; rather, it indicates the emergence of the second potentiality from the actuality of the first potentiality and its identification with actuality as long as the substance preserves its actuality.

1.3. Material Potentiality in Neoplatonic Philosophy: The Incomplete Presence of Form

The criticism of Simplicius against Alexander mentioned above might appear to be a rather far-fetched interpretation of Aristotle at first sight. Nevertheless, it might be a good way to introduce the Neoplatonist theory of *passive potentiality* or *incomplete power*.[24] As stated above, Simplicius interpreted the phrase of *Physics*

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23   Simplicius, *On Aristotle Physics 8.1-5*, 1215,38-1216,5.

24   For description of Neoplatonist passive potentiality see: Cinzia Arruzza, "Passive Potentiality in the Physical Realm: Plotinus' Critique of Aristotle in *Enneads* II 5 [25]", *Archiv für Geschichte der Philosophie* 93/1 (2011): 25-57; Curtis Hancock, "Suggestions of A Neoplatonic Semiotics: Act and Potency in Plotinus' Metaphysics", *Semiotica* 178 (2010): 43-47.

VIII.4, "this is first potentially," as a priority of potentiality, which is superior in rank. For him, this corresponds to *heksis* as a complete and perfect potentiality, rather than *dunamis* or *epitêdeiotês* as an incomplete potentiality: "Dispositional potentiality (*dunamei kata tên heksin*) is more complete than the one according to suitability (*epitêdeiotês*)."[25]

We might need to repeat that when Aristotle and Alexander said that air comes to be from water, for water is first potentially, they meant that air comes to be from water because the principle of air in actuality is in the first potentiality, which both precedes air and is in water. In other words, the principle of actuality is present in the first potentiality in water, which precedes air. However, this approach is not acceptable for a Neoplatonist because nature, as the principle of motion and rest, is raised to the status of being an unconditional agent, which leaves no other principle than material nature for the substantial form. If Plotinus or a member of the Athenian Neoplatonist school was in the commentator's shoes, they would have interpreted the Aristotelian stance with a "closed explanation" that considers only physical principles and as if nature is the ultimate agent.[26] Together with this, the good-willed commentator Simplicius, who follows Ammonius' lesser *sumphonia* project[27] to harmonize the "Platonized" Aristotle with Aristotle, chose to interpret it otherwise. He forces the text so that "first" comes to mean priority and superiority in rank. As a result of this, the text is deprived of the meaning of material nature's being a principle of substantial form and the hazardous consequences of this meaning for Neoplatonist philosophy. In short, it becomes a harmless text. Now, can saying that the principle of the substantial form of water is not in the incomplete but in the complete potentiality open up to a Neoplatonist commentator the possibilities of carrying the principles of actuality into metaphysical causes? If we take the second potentiality here as a power together with the actuality and as being identical to it as long as the substance preserve its actuality (as it is the case in Aristotle), one cannot say that *heksis*, in this sense, is not harmless for Simplicius. In order to see

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25   Simplicius, *On Aristotle Physics 8.1-5*, 1216,1-2.

26   For some of the passages that express this Neoplatonist approach see: Proclus, *Commentary on Plato's Timaeus 1*, tr. Harold Tarrant (Cambridge: Cambridge University Press, 2006), 2,16-29; Proclus, *Commentary on Plato's Parmenides*, tr. Glenn R. Morrow and John M. Dillon (Princeton: Princeton University Press, 1987), 791,23-795,6.

27   For *Lesser Sumphonia Project* see: Robert Wisnovsky, *Avicenna's Metaphysics in Context,* 15, 64, 94, 194. A good example of *Lesser Sumphonia* can be observed in a treatise Ammonius wrote for proving that Aristotle's god is the efficient cause of all universe at the same time. For this treatise see: Simplicius, *On Aristotle's Physics 8,6-10*, tr. Richard McKirahan (London: Bloomsbury, 2001), 1361,11-1363,12. For a complete analysis of the transformation of making Aristotle a philosopher who confirms an existence-giver efficient cause see: Richard Sorabji, "Infinite Power Impressed: The Neoplatonist Transformation of Aristotle", in *Matter, Space and Motion*, Richard Sorabji (London: Duckworth, 1988), 249-286.

how Simplicius' interpretation of *heksis* can be harmonized with Neoplatonism, a further investigation of what he means by *heksis* is needed.

In his commentary of Aristotle's *Categories*, which Ibn al-Nadīm reports was translated into Arabic,[28] when Simplicius explains capability and incapability (*dunamis/adunamia = quwwa/lā-quwwa*), interprets these through the concept of *epitêdeiotês*, which he sees as a special type of potentiality. Simplicius says that capability and incapability, which Aristotle explained by the division of "acting easily" and "being not easily acted upon,"[29] emerges as a result of natural propensity (*epitêdeiotês*)[30] and raises a very crucial question about the relation of potentiality and matter: "Do what is in potentiality and potentiality itself derive from matter, as some think, or is what is in potentiality matter itself, as others think?"[31] In reply to this question, Simplicius says that matter is weak in all respects, totally far from existence, and gives no cause from itself. Therefore, it cannot yield even the beginning of potentiality. According to him matter is powerless and impotent, and so infertile that it cannot cause even the principle of any kind of power to emerge. Since it totally lacks qualities, it cannot be a principle of any quality. Thus, matter includes no productive power and manifests itself only in the form of ultimate need and deprivation. The result is that potentiality is neither matter itself nor of a state of it. Simplicius, who tends to describe matter through negative definitions, denies it existence on its own and thereby asserts that it cannot cause any qualities to emerge. Moreover, he rejects the view that matter is a weak emanation of some metaphysical substances. In other words, it is not a surplus production of the power that causes the existence of all beings through the emanation from the One. Actually, matter is the absence of emanation and plays no influential and transformative role in the equation of genesis.[32] Consequently, it cannot be said to possess *epitêdeiotês* (natural propensity). Therefore it does not possess potentiality and, by extension, any quality. It is deprived of all these in its essence. It contains in itself the principles of no quality, no potentiality, and no natural propensity. This being the case, what are the potentialities that Aristotle "assumed" to be in matter? Simplicius' reply is clear:

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28 See: Ibn al-Nadīm, *al-Fihrist*, I/2, 161,11; also for some fragments from Simplicius' commentary on Categories survived: Mübahat Türker, "*Kategoriler* ve Onun Şerhleri ile İlgili Parçalar", *Araştırma* 3 (1965): 87-122.

29 Aristotle, *Categories*, ed. J. Barnes, tr. J. L. Ackrill (Princeton: Princeton University Press), 9a14-28.

30 Simplicius, *On Aristotle's Categories 7-8*, tr. Barrie Fleet (Ithaca, New York: Cornell University Press, 2003), 242,8.

31 Simplicius, *On Aristotle's Categories 7-8*, 249,23-24.

32 See: Simplicius, *On Aristotle's Categories 7-8*, 249,24-33.

This capacity is to be considered as a foretaste of the form, not a disposition of things lacking in quality. But in fact not even the form, in so far as it is a form and rests *per se* in its own completeness, would bring in capacity to this entity; for the form is complete and entirely self-subsistent, and is prior to capacities which gain their existence from the fragmentation of forms. So the upshot is that capacity gets its existence from the combination of these, i.e. matter and form, or from what is analogous to matter and form. So capacity exists in matter as a result of the form, because of participation, somehow or other, in the *logoi* when some propensity (*epitêdeiotês*) runs out ahead of them, so the participation is the reception of the state, and the reception of the state (*heksis*) conducts it forward into actualisation. (…) For things that are in a state of coming-to-be and are progressing from the incomplete to the complete, receive the progress which is in the reception of the state, and are then apportioned a more complete participation; they keep receiving a succession of participations, the less complete before the more complete; that which is participated in endures, while that which participates cannot receive the form in its entirety at the same time but it receives a less complete form before the more complete one."[33]

This explanation shows that Simplicius regards powers as the incomplete presence of forms in matter. This is in line with the Neoplatonic conception of matter as ultimate darkness. Plotinus writes that this darkness is impassive to reflections, just as a mirror is impassive to reflections touching and reflecting through it. It does not affect any images, and no image affects it.[34] What we call genesis is nothing more than weak and perfect reflections of complete and actual forms. Accordingly, the first and weakest reflection and participation gives birth to the weakest tendency toward actuality. Simplicius considers this to be the first potentiality and he calls it *epitêdeiotês*, a term that can be translated as "natural propensity" and is generally seen in Arabic translations as *istiʿdād* and sometimes as *tahayyu'*. After the reflection and participation that causes *epitêdeiotês,* a second and more powerful participation causes a more perfect potentiality and tendency toward actuality. Simplicius calls this second potentiality, *heksis*. In other words, when Simplicius mentions *heksis* he means precedence to the complete actuality of form and a state that is both incomplete in relation to this actuality and is more complete in comparison to *epitêdeiotês*. Since it is more complete, it comes before *epitêdeiotês* in terms of completeness and therefore clearly deserves to be "first" in rank. This interpretation clarifies what Simplicius means in his *Physics* commentary with "dispositional potentiality (*dunamei kata tên heksin*) is more complete than the

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33   Simplicius, *On Aristotle's Categories 7-8*, 249,33-250,8; 250,11-15.

34   For Plotinus' notion of matter see: Plotinus, *Enneads*, tr. Arthur Hilary Armstrong (London: Harvard University Press, 1988), II 5, 5.1-9, II 4, 13.26-30; II.5, 5.1-7; III 6, 7.16-29.

one according to suitability (*epitêdeiotês*)." Thus what rescues Simplicius, who regards *heksis* as "first," from the Aristotelian hazard is his transformation of the conception of *heksis*. "First" here is not the Aristotelian *heksis* that becomes necessarily actual whenever there is no hindrance and identical to substantial form that finds its principle in the first potentiality, but rather a more Neoplatonised *heksis*, which precedes the actuality of form and is a more complete potentiality than *epitêdeiotês*. In other words, Simplicius interprets Aristotelian *heksis*, which emerges as a result of the actualization of the first potentiality, as a passive potentiality that clearly precedes actuality.

One can therefore state that his criticism of Alexander in his commentary of *Physics*, together with the basis for this criticism and the goal that he sought to achieve by making it, are highly representative of the Neoplatonist stance on the theory of incomplete potentiality, because it becomes meaningful only when placed in the context of the relation of the recipient and what is received in the emanation theory. One of the concise expressions of this theory of incomplete potentiality can be found in Proclus' *Elements of Theology*:

> All that comes to be arises out of the twofold potency. For the subject of the generation must itself be fitted for it (*auto dei epitêdeion einai = quwwatun qābilatun li al-kawn / mutahayyiatun li al-fi'l*) and so possess an imperfect potency; and the agent, being already in actuality. Together with this, one of these two powers have to be complete (*tāmm = dunamin teleian*) and the other one incomplete (*nāqiṣ = dunamin atelês*). Incomplete power is the power which prepared for the actuality. If the agent exists without a potency for act, it cannot act upon another. And if the subject of generation exists without a receptive potency (*epitêdeiotêta dunamin = quwwa mutahayyia li-qabūl*), it cannot come to be. An agent acts always upon something capable of being affected not on any subject and on the things cannot affect from it.[35]

According to Proclus' description in this passage, Simplicius' schema of potentiality, which is structured around *epitêdeiotês* and *heksis*, is a schema of incomplete power (*al-quwwa al-nāqiṣa = dunamis atelês*), because for Proclus, power divides into two: complete (*teleian*) and incomplete (*atelês*). Perfect power, in the sense of complete and real, corresponds to the productive power possessed by metaphysical causes.[36] Incomplete power, in return, is a quasi-reality and preparedness toward the realization of actuality completed by an existence-giver

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35   Gerhard Endress, *Proclus Arabus, Zwanzig Abschnitte aus der Institutio theologica in arabischer Übersetzung* (Wiesdaben-Beyrut: Imprimeire Catholique, 1973), "Faṣl fī al-kawn", 30; cf. Proclus, *The Elements of Theology*, tr. Eric Robertson Dodds (Oxford: Clarendon Press, 1971), Prop. 79.

36   See: Endress, *Proclus Arabus*, "Faslun fī al-'illa al-ūlā", 29; cf. Proclus, *The Elements of Theology*, Prop. 78.

complete power. As Plotinus stated in *Enneads* II.5 (25), the first one is productive power (*hê dynamis*) and the second one is the power of becoming (*dynamei on*).[37]

Now it is obvious how the Neoplatonists differ from Aristotle and Alexander on the power of becoming. The real reason for this separation is that the former accept a motion-based theory of potentiality and actuality, whereas the latter group follows a metaphysical eidetic causality and an existence-based theory of recipient and what is received.[38] Built on the metaphysical eidetic causality, *heksis* (which is translated as *tahayyu'*) is no longer a power that emerges after or with actuality, but rather a passive power that precedes actuality. I will discuss below that this Neoplatonic interpretation might possibly one of the reasons why the Avicennan concept of *tahayyu'* is almost always used as a passive potentiality that precedes actuality (in contrast to Aristotle and Alexander's usages). Other than this intervention about *heksis*, when the terminology of power is analysed, we find that Proclus and Simplicius introduced a new term in their explanations – *epitêdeiotês* – a term that cannot be seen in Alexander and Aristotle's terminology of *dunamis-heksis-diathesis*.

1.4 *Epitêdeiotês*: An Alternative to the Aristotelian *Dunamis*?

In Proclus' explanation, *epitêdeiotês (al-quwwa al-mutahayyia li qabûli al-fi'l)* means the whole realm of passive potentiality, whereas in Simplicius it means a weaker passive potentiality in comparison to *heksis*, which he considers a more complete and perfect potentiality. Together with this, this new term, especially in the hands of some Ammonian commentators, is not used in the context of the Neoplatonist logic of emanation. Rather, it is used to explain different levels of the relation of potentiality-actuality by including it in the Aristotelian theory of potentiality. Some authors, among them S. Sambursky, G. E. L. Owen, E.R. Dodds, and R. Todd had discussed earlier whether this usage of *epitêdeiotês* includes a conceptual transformation or not in respect to Aristotelian *dunamis*.

Even though Aristotle's philosophical repertory does not contain *epitêdiotês* in its strict meaning of passive potentiality,[39] some ancient philosophical texts do use

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37 For the mentioned division also see:. Antony C. Lloyd, *Anatomy of Neoplatonism* (Oxford: Clarendon Press, 1990), 104; Arruzza, "Passive Potentiality in the Physical Realm", 25-57; Hancock, "Suggestions of a Neoplatonic Semiotics", 43-47.

38 For Neoplatonist metaphysics of recipient and what is received (*qābil* and *maqbūl*) and eidetic causality see: Jonathan Scott Lee, "Omnipresence, Participation, and Eidetic Causation in Plotinus", in *The Structure of Being, A Neoplatonic Approach*, ed. R. Baine Harris (Norfolk: International Society for Neoplatonic Studies, 1982), 90-103; Jonathan Scott Lee, "The Doctrine of Reception According to the Capacity of the Recipient in *Ennead* VI.4-5", *Dionysius* 3 (1979): 79-97.

39 The word *epitedeios* is used in Aristotle's texts to mean "fitness" with no further implications. This

it to refer to the division between possessing a power and actualizing that power. Thus, before the terminologized usage of Neoplatonists, *epitêdiotês* expressed the division between the capacity to do something and actually using this capacity.[40] Together with this, Dodds examines three sophisticated usages of *epitêdiotês:*

(i) The inherent capacity for acting or being acted on in a specific way, (ii) the inherent affinity of one substance for another, and (iii) the inherent or induced capacity for receiving a divine influence. The second usage describes the *sumpatheia* between substances and was invoked to account for action at a distance. The third usage expresses the old idea that only persons in a 'state of grace' can perceive the divine presence or the occult virtues ascribed in Egyptian magic to certain stones.[41] In contrast to these two, the first usage is included in the philosophical literature and started to be seen as rival to the Aristotelian theory of potentiality.

R. B. Todd, who works specifically on the term *epitêdeiotês*, links the word's transformation from the secondary usages, which eventually depend upon the meaning of 'fitness', into a philosophical term to Philo (c.a. 300 bc.). Philo held that something was 'fit' to act or be affected even if it never realised this 'fitness' and even if conditions prevented it from doing so. He called this 'fitness' *epitêdeiotês*.[42] For example, according to him a piece of wood in the Atlantic Ocean will preserve its characteristic of being combustible even if it is in water. In contrast to Philo's usage, such Neoplatonist commentators as Philoponos did not take *epitêdeiotês* as 'bare or inherent fitness' (*mone epitêdeiotês*), but rather as 'fitness conditional on there being no obstacle to actualisation' (*akôlutos epitêdeiotês*).[43] Because of this, Simplicius follows this same line and states that we can say that the wood possesses the characteristics of combustibility only if there is no obstacle to its burning. Philo says that there is no division between capacity and action; however, Simplicius separates the two.[44] In a similar manner, Alexander reports that Philo expresses this opinion only in the context of the fitness of the subject and did not consider the external conditions that can interfere with this fitness.[45]

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phrase is translated into Arabic in some parts of *Physics* to mean fitness and suitability as *ṣalaḥa* and *muwāfaq*. See: Arisṭūṭālis, *al-Ṭabiʿa*, 145,3; 145,9. cf. Aristotle, *Physics*, 198b25, 198b30.

40 Todd, "*Epitedeiotes* in Philosophical Literature", 26; Also see: Dodd's explanatory note to page 222, in Proclus, *The Elements of Theology*, "Addenda et Corrigenda" (344-345).

41 See: Dodds, "Addenda et Corrigenda", 344-345.

42 Todd, "*Epitedeiotes* in Philosophical Literature", 25-35; For Philo's approach see: Alexander of Aphrodisias, *On Aristotle Prior Analytics 1.14-22*, trs. Ian Mueller and Josiah Gould (London: Bloomsbury, 2013), 184,6-18; Simplicius, *On Aristotle's Categories 7-8*, 195,33 ff.

43 See: Philoponus, *On Aristotle On the Soul 1.3-5*, trs. Philip J. van der Eijk (New York/Ithaca: Cornell University Press, 2006), 107,26-109,6.

44 Simplicius, *On Aristotle's Categories 7-8*, 195.32-196.3.

45 Alexander of Aphrodisias, *On Aristotle's Prior Analytics 1.14-22*, 184,10-18.

According to Todd, *epitêdeiotês* is an innovation in the case of Philo, for he chose to use the notion to express an unconditioned perpetual capability, whereas it does not exhibit an innovative usage by those Neoplatonist commentators who choose to use it to explain Aristotelian *dunamis*. These later usages, all of which refer to different levels of potentiality toward actuality are either merely detailing the notion of potentiality or accompanying the Aristotelian usage of *dunamis* in a parasitic manner. According to this view, Philo's usage is new because it transforms the Aristotelian notion of potentiality and claims that there is actuality wherever there is potentiality. In this way, he identifies power with act. What makes Simplicius and Philoponus' usage devoid of innovation is that their understanding of *epitêdeiotês* adds no new meaning to the Aristotelian potentiality. Thus they only scale potentiality in relation to its proximity to actuality and then invent a new name for it in a manner that debased its original Megaric philosophical sense.

However, Sambursky claims that there is an innovation, particularly in Philoponus' usage: The propositions "cotton is capable of being combusted" and "cotton is capable of being combusted when there is no obstacle to its combusting" are different. In the second case, all of the powers that can turn out to be obstacles should be eliminated and cotton should possess the capacity of being combustible. According to Sambursky, Philoponus names this state of complete possession *epitêdeiotês*.[46] Owen, who criticizes Sambursky, claims that there is no authenticity in Philoponus' usage and addresses the examples in *De Anima* and *Physics* to suggest that there too, a person is viewed as having power in general but is unable to use it unless the conditions are met.[47] For example, a child has the capability to solve one problem; however, he cannot solve it unless he is old enough or educated. If Philoponus' addition to the Aristotelian notion of *dunamis* is nothing more than the concept of "meeting suitable conditions", then there really is no innovation in *epitêdeiotês*. Moreover, in his commentary on *Generation and Corruption*, the sections in which Philoponus uses *epitêdeiotês* for the Aristotelian first potentiality prove that he does not regard this term as an alternative to the Aristotelian theory of power.[48]

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46 See: Sambursky, *Physical World of Late Antiquity*, 99-122; Sambursky, "Conceptual Developments and Modes of Explanation", 73-74. For Philoponos' usage of *epitêdeiotês* which is referred to here: Philoponus, *On Aristotle On the Soul 1.3-5*, 107,26-109,6.

47 Owen, "Commentary", 93-102, özl. 97-98.

48 See: Philoponus, *On Aristotle On Coming-to-Be and Perishing 1.6-2.4*, trs. C. J. F. Williams (London: Bloomsbury, 2013), 188,16-26. Frans de Haas, who uses this passage in his article on the issue of what kind of potentiality qualities take place in mixture, defines the new kind of potentiality brought about by Philoponus' mixture theory as tempered actuality (*kekolasmenon*). In harmony with the mentioned passage, in de Haas' analysis *epitêdeiotês* also preserves the meaning of Aristotelian first potentiality. See: Frans A. J. de Haas, "Mixture in Philoponus, An Encounter with a Third Kind of Potentiality", *The Commentary Tradition on Aristotle's De Generatione et Corruptione, Ancient, Medieval and Early Modern*, ed. J.M.M.H. Thijssen and H.A.G. Braakhuis (Brepols, 1999), 21-46.

However, one should be reminded that instead of Aristotle and Alexander's division of *dunamis* and *heksis*, Neoplatonist commentators divided passive power (*dynamei on*) into *epitêdeiotês* and *heksis*. If *epitêdeitês* is evaluated both within the context of the Aristotelian theory of potentiality and in relation to the commentary practices of those Neoplatonist commentators who sought harmony between Aristotle and Plato, one can understand that their use of this term in a Neoplatonic context goes beyond an attempt to rename the Aristotelian first potentiality. Such Neoplatonist commentators as Philoponus and Simplicius used *epitêdeiotês* to indicate two different meanings in different contexts: to express the incomplete presence of intelligible forms and to mean the Aristotelian first potentiality. This double usage probably provided, especially for the Ammonian commentators supporting lesser *sumphonia*, a basis for the Aristotelian theory of potentiality from the Neoplatonist metaphysics of recipient and what is received. However, although this maintained emanationist basis gave Neoplatonists an ontological break on the closed layers of the Aristotelian universe, it deprived them of one of the strongest features of the Aristotelian theory of potentiality: substantial unity.

2. Avicenna's Theory of Natural Propensity (*al-Istiʿdād*)

In terms of the Aristotelian *dunamis-heksis* and the Neoplatonist *epitêdeiotês-heksis* theories, Avicenna inherited two explanations that he could not completely accept: (1) the approach in which *heksis* is admitted to be identical with actuality as long as the substance preserves its actuality, and, in terms of natural powers, the absence of a conception of bare potentiality that is separated from actuality, and (2) the Neoplatonist approach in which powers are seen as incomplete emanations of metaphysical substances. For Avicenna, the first approach is unacceptable primarily because it does not explain the existence of substantial forms but rather their perpetual succession by reproducing one individual from another individual.[49] In

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49   For Avicenna's criticisms towards Aristotelians who see substantial generation as a motion based mechanism of material formation see Ibn Sīnā, "Kitāb al-Inṣāf, Sharḥu Kitāb Ḥarf al-Lām", in *Arisṭū ʿinda al-ʿArab*, ed. Abd al-Raḥmān Badawī (Cairo, 1947), 23,21-24; Ibn Sīnā, *Taʿlīqāt*, ed. Abd al-Raḥmān Badawī (Qum, 1984), 62. Here Avicenna characterizes those who explain God and the generation of the universe only by focusing on motion as *physicists (al-ṭabīʿyūn)* and those who explain by focusing on existence and the necessity of existence as *metaphysicians (al-ilāhīyūn)*. Contrary to the physicists, the metaphysical philosophers distinguish the efficient cause into natural and metaphysical efficient cause and relate the former with motion and the latter with giving existence. For this differentiation see Ibn Sīnā, *al-Shifā/as-Samāʾ al-ṭabīʿī*, 15-16, 66; *al-Taʿlīqāt*, 39; *al-Shifā/Ilāhiyyāt*, VI.2. For Avicennan metaphysical efficient cause also see Michael E. Marmura, "The Metaphysics of Efficient Causality in Avicenna", *Islamic Theology and Philosophy*, ed. Michael E. Marmura (Albany: State University of New York Press, 1984), 172-187; Michael E. Marmura, "Avicenna on Causal Priority", *Islamic Philosophy and Mysticism* in, ed. Parviz Morewedge (Delmar, New York: Caravan Books, 1981), 65-83. For Avicenna's

other words, this does not explain how the substantial form of a tortoise comes into existence, but rather how this form is passed from one tortoise to another. Thus it attempts to explain the generation of one individual from another individual.[50] Together with this, even if Avicenna differs from Aristotle by trying to explain both motion and existence, he does agree with Aristotle on the substantial unity of composite substance. According to him, composite substances cannot be reduced to lower (i.e. atoms) or higher (i.e. ideas) ontological stuffs, for they are one and continuous by and in themselves (*jawharun wāḥidun muttaṣilun bi al-dhāt*).[51] This agreement, then, causes Avicenna to disagree with the Neoplatonist position. Although the Neoplatonist approach, which admits passive powers as incomplete emanations of permanently actual intelligible forms, does open some space for an efficient cause that explains existence (this is what Avicenna seeks), because it also sees matter as indifferent to generation and thus sees powers only as the incomplete presence of forms, this explanation harms the substantial unity and the continuationist position. In order to get an explanation for the existence of sensible substances without falling into the trap of reductionist approaches, Avicenna attempts to revise both the Aristotelian *dunamis-heksis* and the Neoplatonist *epitêdeiotês-heksis* and reinterpret them according to his own distinctions, such as *wujūd-māhiyya and wujūb-imkān*.

We can sum up his reinterpretations of potentiality with the goal of 'explaining existence and avoiding the trap of reductionism' under two titles: (1) He interprets Aristotle's idea of potentiality, which is nothing other than actuality in the generation of a substance, in a way that it evolves into the idea of potentiality that is completely separate in itself from actuality, which he attributes only to the

critique of Christian philosophers of Baghdad to whom he relates as the physicists see H. Vivian B. Brown, "Avicenna and the Christian Philosophers in Baghdad", *Islamic Philosophy and The Classical Tradition: Essays Presented by His Friends and Pupils to Richard Walzer on His Seventieth Birthday*, ed. Samuel Miklos Stern, Albert H. Hourani ve Vivian Brown (Columbia, South Carolina: University of South Caroline Press, 1972), 35-48.

50   For some contemporary studies asserting that Aristotle sought to explain generation and change instead of the existence of beings, see. Sorabji, "Infinite Power Impressed", 249-250; Christopher Shields, "The Generation of Form in Aristotle", *History of Philosophy Quarterly* VII/4 (1990): 367-383. For a discussion regarding Aristotelian theory of substantial generation as attempting to explain not the existence of species, but rather the generation of one individual in a species from the other, see John M. Cooper, *Knowledge, Nature and the Good, Essays on Ancient Philosophy* (Princeton: Princeton University Press, 2004), 107-130 ("Aristotle on Natural Teleology"), 174-204 ("Metaphysics in Aristotle's Embriology"); David M. Balme, "Teleology and Necessity", *Philosophical Issues in Aristotle's Biology* in ed. Allan Gotthelf ve James G. Lennox (Cambridge: Cambridge University Press, 1987), 277-278.

51   For Avicenna's texts that show his conception of continuity see Ibn Sīnā, *al-Shifā/Ilāhiyyāt*, 61,5; 238,9-12; 98-99. For Avicenna's critique of atomism see *al-Shifā/as-Samā' al-ṭabī'ī*, 184-203; *al-Shifā/al-Kawn wa al-fasād,* 84-85, 92-93, 113-121; *al-Ishārāt*, ed. Mujtabā ez-Zāri'ī (Qum, 1380), 189-191. For basic passages containing criticisms towards Platonic Ideas see Ibn Sīnā, *al-Shifā/Ilāhiyyāt*, VII.2-3; *al-Shifā/al-Burhān*, ed. A. E. Affīfī (Cairo, 1946), 188-89.

agent, and (2) by keeping his distance from the Neoplatonist "incomplete presence" in order to protect substantial unity of sensible substances, he explains natural propensity with the primary and secondary mixtures and the motions of celestial bodies. As I have discussed this second step in a previous work,[52] I will not discuss it any further here. Instead, in the section below I will discuss how Avicenna arrived at the concept of bare and separate potentiality in his attempt to explain existence and what makes his *istiʻdād* and *tahayyuʼ* authentic in comparison to the Aristotelian *heksis* and the Neoplatonic *epitêdeiotês*.

II.1. *Imkān, Quwwa*, and *Istiʻdād-Tahayyuʼ*

In order to achieve "explaining existence and avoiding the traps of reductionism", the first thing that provided Avicenna with a theoretical base is his division of several kinds of possibility built upon his own division of existence and essence. One possibility finds its meaning through its relation to substratum (*maḥall*) of essence, whereas another one finds its meaning through the relation to essence itself:

> "That which is possible to be must either be possible to be and not to be some other thing – and this is the subject for the form of [the other] thing to inhere therein – or to be as such when considered in itself. As, for example, whiteness if it is possible for it in itself to be and not to be." [53]

An essence's essential possibility (*al-imkān al-dhātī*) in respect to its essential reality is nothing more than the unnecessity of its existence and non-existence. For example, when we exclude the matter in which the essence of a human being is present and consider merely its essence, we will see that a human being is possible in itself. And this is essence's possibility in itself, in the meaning of its equal contingency for existence and non-existence. This possibility exists with the essential reality of the essence, not with the subject in which the essence is present. In contrast to this, if we consider possibility in respect to the subject in which the essence will exist, rather than the essence in itself, our topic turns into a possibility in the sense of propensity (*al-imkān al-istiʻdādī*). For example in the matter in which the nature of human being will exist, there is a propensity of the substantial form of human being. The possibility in this sense is the subject's propensity for receiving the form. In contrast to an essential possibility, this possibility is receptive of such states as strength and weakness, completeness and incompleteness, and proximity

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52   See. İbrahim Halil Üçer, *İbn Sînâ Felsefesinde Suret, Cevher ve Varlık*, İstanbul: Klasik Yayınları (forthcoming).

53   Ibn Sīnā, *al-Shifā/Ilāhiyāt*, IV.2, 177,6-10.

and remoteness.[54] The sperm's *istiʿdād* of receiving the form of a human being is less than that of an embryo, and the *istiʿdād* of an embryo is less than that of a foetus. Eventually, all of these have less *istiʿdād* in comparison to a human body that reached complete propensity, together with its organs, to receive a soul. This possibility, in the sense of propensity, which Avicenna considers the fourth meaning of possibility (in general) in his *Al-Shifā/Ilāhiyāt* IV.2,[55] occur in many of his books as a specialized power, one that is evidently separated from the meaning of general or first potentiality:

> We should know that potentiality is one thing, and that complete propensity (*al-istiʿdād al-tāmm*) is another. In matter, all contraries are present in a state of potentiality; matter, however, specializes into one of these various contraries because matter possesses a complete propensity that makes it peculiar for one state.[56]

> Potentiality is equal in existence and nonexistence; however propensity is becoming of one power primary in the matter. For example, the matter of fire is potentially receptive of fire's form. However, when cold becomes dominant over this matter, the matter becomes receptive to the form of water instead of the form of fire.[57]

> Potentiality has equal relations to the two different contraries; propensity, on the other hand, does not have this equal relation to the two contraries. (…) Accordingly, propensity resembles that which makes potentiality perfect in respect to the two contraries (*yushbihu an yakūna al-istiʿdādu mustakmilan li al-quwwati bi al-qıyāsi ilā aḥadi al-mutaqābilayn*).[58]

Avicenna needs to differentiate *istiʿdād* from the potentiality that has equal possibility to contrary forms, because of his explanation of the relation between subject and form. In contrast to the Necessary Existence, which possesses no potentiality, the possible beings possess subjects (*maḥall*) that contain their potentialities. When we come to the separate intellects, their possibility of existence presents along with their intelligible essences or forms.[59] As for the heavenly spheres, despite the fact that their subjects, which bear their possibility, are separate from their forms, these subjects only need their special forms. In other words, they

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54   Ibn Sīnā, *al-Shifā/Ilāhiyāt*, IV.2, 174-76.

55   See Ibn Sīnā, *al-Shifā/Ilāhiyāt*, IV.2, 171,13-172,5; cf. *al-Mubāḥathāt*, ed. Muḥsin Bīdarfar (Qum: Intishārāt Bīdār, 1423), #149.

56   Ibn Sīnā, *al-Shifā/al-Kawn wa al-fasad* 191,1-4; "Kitāb al-adwiyat al-qalbiya", 226-7.

57   Ibn Sīnā, *Dānishnāma-yi ʿAlāʾī*, 159-60

58   Ibn Sīnā, "Kitāb al-adwiyat al-qalbiya", 226-227. For other definitions similar to this: *Taʿlīqāt*, 55; *al-Shifā/al-Afʿāl wa al-infiāʿlāt*, 255-256.

59   Avicenna's phrase that further explains this is: "When something exists, it either exists by itself and in this case possibility of its existence is its abstract existence (*imkānu wujūdihī huwa annahū yumkinu an-yakūna qāʾiman mujarradan*) or that it is existent in another [subject]." Ibn Sīnā, *al-Shifā/Ilāhiyāt*, 177,10-12. Also see: *al-Mubāḥathāt*, #824.

do not need any specialization in terms of their potentiality to receive their forms. Thus, the potentiality of these substances does not need to change into *ist'idād*, for their subjects are peculiar to their souls.[60] For this reason, the emergence of separate intellects and celestial souls from the divine emanation does not need to the process of preparation, which precedes their forms' existence in their subjects. Independent of any preparation process, the divine emanation instantly produces the mentioned forms, without any temporal process. In contrast to intellects and celestial souls, the first matter, which is the subject of forms in the sublunar world, is neither identical with the form that has the capability to receive it nor has the potentiality of one and only one form. The first matter has an infinite potentiality for receiving all contrary forms in the sublunary world. Thus, in order for the first matter to receive specific forms (e.g., fire, air, water, and earth), its general power first should specialize and become peculiar to only one form.[61] In other words, *hayūlā* as the substratum of natural forms, in contrast to Necessary Existence, which is independent of any substratum and is nothing but pure formal meaning (*fawqa al-tāmm = above perfection*) and to separate intellects whose possibility is along with its essence and are perfect (*tāmm*) and to celestial bodies whose subject is peculiar to one form, thus are called self-sufficient (*muktafin*), and doesn't need any other form; is receptive of all contrary forms. In order to continue its existence, it needs the constant flow of forms from the Active Intellect. Thus it is called incomplete (*nāqiṣ*).[62] The real reason for *isti'dād* is this incompleteness of the sublunary substances. *Isti'dād*, then, is the name of the power that comes to be due to the process of specification and preparation of matter in order to receive a special form.

Now, with this meaning, what does *isti'dād* correspond to in terms of the philosophical tradition that Avicenna inherited? Avicenna presents a passage that helps us answer this question in *Al-Shifā/Al-Maqulāt*, in which he evaluates the different kinds of quality:

> Another genus of the genera of quality, which are the species of the general quality, should be conceived thus: Complete corporeal propensity toward a state other than itself from an aspect (*isti'dādun jismāniyyun kāmilun naḥwa amrin khārijin bi-jihatin min al-jihāt*). [This propensity] is not the potentiality in the first matter; neither is it the potentiality that means possibility *(quwwat al-jawāz)*. However, because each human is potentially healthy and sick, when potentiality, which means natural possibility, focuses on one side of the contrasts (sickness and health), *isti'dād* is completed. In this way, in a

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60 Ibn Sīnā, *al-Hidāya*, ed. M. 'Abduh (Cairo, 1974), 179,4-8; *Dānishnāme-yi 'Alā'ī*, 90-91; *al-Najāt*, ed. A. Umayra (Bairut: Dār al-jīl, 1992), 124,19-125,1; *al-Shifā/Ilāhiyāt*, 87,13-13; 88,5-12.

61 Ibn Sīnā, *Dānishnāme-i 'Alā'ī*, 90-91; *al-Najāt*, 124,1-125,1; *al-Shifā/Ilāhiyāt*, 87,14-88,4.

62 For definitions of *fawqa al-tāmm, tāmm, muktafin* and *nāqiṣ,* see Ibn Sīnā, *al-Shifā/Ilāhiyāt*, 189.

thing's power there is not only receiving this or that sickness or wrestling with someone. Moreover, the reception of sickness is preferable to the reception of health and the reception of wrestling is to the reception not-wrestling. Healthiness and illnessness, the state of wrestling and being wrestled, preferred hardness that cannot be operated on and preferred softness that can be operated on are among types of this quality.[63]

Avicenna's usage of *istiʿdād* in this passage seeks to define capability and incapability (*al-quwwa* and *lā quwwa*), which is the second part of the category of quality (*al-kayfiya*) after disposition and condition (*malaka* and *ḥāl*). The definition of *istiʿdād* here is in line with his definitions in his other books: When there happens to be a relation in the unconditioned potentiality, which possesses an equal possibility toward contraries, to one of the contraries, and then becomes intensified, we can say that that thing has natural propensity to that contrary. What is interesting, at least for this section of *Categories*, is that Avicenna makes explicit that our calling different active and passive powers, which are under the capability and incapability, as *quwwa* equivalently, becomes possible only by defining them in terms of *istiʿdād*. The suspicion that resulted in the use of *istiʿdād* to define *quwwa* and *lā quwwa* arises from the inadequacy of a state that Aristotle defined as capability (i.e., acting easily and being acted upon with difficulty) and incapability (acting with difficulty and being acted upon easily). Thus, Aristotle used "acting easily or with difficulty" in order to define capability and incapability.[64] Together with this, the situation created a suspicion on this kind of quality's being a genus for its different species. In order to overcome this problem, Avicenna defined these situations according to *al-istiʿdād*. In this respect, he explained that what is meant by wrestling is "the *istiʿdād* of the body to protect its natural state". Avicenna then redefined the kinds of capability and incapability through *al-istiʿdād*. According to this, we can define capability as the strong natural propensity that will exist as non-passivity when one of the equal sides of natural possibility is completed (e.g. healthiness) and incapability as the strong natural propensity that will exist as an actual passivity when one of the equal sides of natural possibility is completed (e.g. sickness). To summarise, this propensity either develops and becomes perfected toward the steady of natural tendency and is called either natural power or capability, or it develops and becomes perfected toward changing this natural state and is called incapability (*la quwwā*). When this is the case, healthiness, wrestling, and being hard are capability, and sickness, being wrestled, and being soft are incapability.

We describe the function of *istiʿdād* in *Shifā/Maqūlāt* V.3 and V.4 in detail because this will help us distinguish *istiʿdād* from the Aristotelian *dunamis*, *heksis*,

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63   Ibn Sīnā, *Al-Shifā/al-Maqūlāt*, ed. E. Qunawātī ff. (Cairo, 1958), V.3, 183,12-19.

64   Aristotle, *al-Maqūlāt*, 56,5-15; cf. Ibn Sīnā, *Al-Shifā/al-Maqūlāt*, 186,4-7.

and *diathesis*. The passages quoted above prove explicitly that Avicenna not only differentiates *istiʿdād* from *dunamis*, but also from *heksis* (*al-malaka*) and *diathesis* (*al-ḥāl*), for in contrast to *heksis* and *diathesis*, both of which are actual qualities, *istiʿdād* is a specialized potentiality that precedes them. According to this, whereas health (*ṣiḥḥa*) and sickness (*maraḍ*) are *al-malaka* or *al-ḥāl*,[65] healthiness (*al-miṣḥāḥiyya*) and illnessness (*al-mimrāḍiyya*), which generate in the body a specialized potentiality toward health or sickness, are *istiʿdād*.[66] Here *istiʿdād*, in relation to Aristotelian *dunamis* and *adunamia* (*quwwa* and *lā quwwa*), expresses a specialized state of potentiality and, in comparison to *heksis* and *diathesis*, a state of preparedness that precedes them.

Another term used in Avicennan literature in parallel with *istiʿdād* is *tahayyuʾ*. Avicenna does not use *tahayyuʾ* or *mutahayyiʾ* in parallel with Alexander's *heksis* and its derivations translated into Arabic with these same words. Instead *tahayyuʾ* is just like *istiʿdād*, a specialized potentiality that precedes actuality. In this sense *tahayyuʾ*, when used in the form of *al-tahayyuʾ al-awwal*, corresponds to *al-quwwa* used in the forms of *al-istiʿdād al-aṣlī*, *al- istiʿdād al-muṭlaq*, *al- istiʿdād al-baʿīd*, or *al istiʿdād al-nāqiṣ*. When used as *al-tahayyuʾ al-thānī* and *al-tahayyuʾ al-tāmm*, it corresponds to the specialized potentiality that is expressed with such phrases as *istiʿdād al-qarīb*, *istiʿdād al-tāmm*, and *istiʿdād al-kāmil*.[67] Thus *tahayyuʾ* is used almost always interchangeably with *istiʿdād*. When Avicenna wants to point to *heksis* in the sense that Alexander and Aristotle did to mean the second potentiality that emerges either with or after actuality, he uses such terms as, *hayʾāt*, and *malaka*.

Avicenna's usage of *istiʿdād* in terms of degrees of potentiality has a strong kinship to Simplicius' usage of *epitêdeiotês* in his *Commentary* of Aristotle's *Categories*. When

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65   Ibn Sīnā, *al-Shifā/al-Maqūlāt*, 182,13-14.

66   Ibn Sīnā, *al-Shifā/al-Maqūlāt*, 183,17-8.

67   We can find such an example of synonymous use in *Al-Kawn wa al-Fasād* and *al-Najāt*. In *Al-Kawn wa al-fasād*, 14, Avicenna states that the qualities of the elements may strengthen or weaken, and this process of change creates two borderline points in respect to the qualities. When these points are exceeded, the *complete tahayyuʾ* in these elements dissipates and that element possesses a *complete istiʿdād* to receive a different form (*Al-Shifā/al-Kawn wa al-Fasād*, 190,10-16). Any inquiry regarding the different use of *tahayyuʾ* and *istiʿdād* here can be resolved with a passage in *Al-Najāt*, which quotes the theory in *Al-Kawn wa al-Fasād* (*Al-Najāt/Ṭabīʿiyāt*, 182,13-16). Here, Avicenna states that when the quality of an element strengthens through change, the prior *istiʿdād* in that element dissipates and an *istiʿdād* for a new form arises. Here, in *Al-Kawn wa al-Fasād,* instead of *tahayyu*, *istiʿdād* has been used synonymously. Again in *Al-Shifā/Ilāhīyāt*, 411,5-16, *al-tahayyuʾ al-awwal* as primary potentiality is expressed in *Al-Shifā/Al-Samāʿ al-ṭabīʿī* 77,2 as *al-istiʿdād al-aṣlī*. Again in *Al-Shifā/Ilāhīyāt* 411,5-16, *al-tahayyuʾ al-tāmm* in the sense of full *munāsaba* towards specialized forms is used in the same meaning as *istiʿdād al-kāmil* or *al- istiʿdād al-tāmm* which Avicenna uses very frequently. In addition to these examples, when Avicenna says in *Al-Shifā/Al-Samāʿ al-ṭabīʿī*: "When we mean by *istiʿdād* [not primary *istiʿdad* or primary *tahayyuʾ* but] complete *tahayyuʾ*, this is given by the agent" (76,23-77,1), he means the complete *istiʿdād* appearing after the change given by the motion giving agents in matter, and expresses that sometime when we use *istiʿdād* we mean complete *tahayyuʾ*.

commentating on Aristotle's *dunamis* and *adunamia*, like Avicenna, Simplicius also clarifies *epitêdeiotês* in the sense of a natural propensity as the defining property of *dunamis* and *adunamia*.[68] The doubts he raised and his suggestion of *epitêdeiotês* as a solution to the problems reflect a similar strategy to the one employed by Avicenna. Moreover, like Avicenna, Simplicius places *epitêdeiotês* somewhere between absolute power and disposition. According to him, things come into being in the following order: *dunamis*, *epitêdeiotês, heksis*, and *energia*. Avicenna also differs from Simplicius when it comes to the usage of *heksis*. For Avicenna, *tahayyu'*, which corresponds to *heksis,* and *epitêdeiotês,* which corresponds to *isti'dād,* are the same; Simplicius regarded these as different degrees of completion of the participation. In fact, Avicenna combines the words *heksis-tahayyu'*,[69] which terminologically has Aristotelian roots, as well as *epitêdeiotês-isti'dād,*[70] which terminologically has

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68   Simplicius, *On Aristotle's Categories 7-8*, 242,8. The reflection of this use in Simplicius can be seen in al-al-Fārābī's use of *isti'dād* in his *Al-Maqūlāt*. Here, al-Fārābī uses the term *isti'dād* to denote capability and incapability without specifically implying that his use seeks to unify the categories of quality which are under capability and incapability like in Simplicius and Avicenna after him. Bkz. al-Fārābī, "Kitābu Qātāghūriyās ay al-Maqūlāt", *Manṭiq 'inda al-Fārābī I*, ed. Rafīq al-'Ajam (Bairut: Dār al-mashriq, 1985), 100,1-12. For other places in which al-Fārābī uses *isti'dād* see al-Fārābī, *Kitāb Ârā ahl al-madīna al-fāḍila*, ed. A. N. Nādir (Beirut: Dār al-mashriq, 2002), 99,1-4; al-Fārābī, *Kitāb al-Siyāsat al-madaniyya*, ed. F. M. Najjār (Bairut: Dār al-Mashriq, 1993), 77,5. The use in *al-Madīna al-Fāḍila* is related to embryology and expresses the *isti'dad* forming effect of the female power a propensity for accepting form. In *al-Siyāsa al-madaniyya, isti'dād* is qualified with *kamāl* and *naqṣ* to explain the difference between the abilities of people towards the arts. Disregarding these few particular uses, it cannot be said in al-Fārābī that *isti'dād* has a central role in the explanatory theory with regards to the mechanism of the rational and material formation such as in Avicenna.

69   Although h*eksis* is translated in Greek-Arabic translations with *malaka* and *hāl* and other words depending on the context, in most cases it is corresponded with words deriving from the root h-y-'. Translations in Alexander's *Quaestio*, III.3 (*de Sensu*), in Aristotle's *Metaphysics* (*Mā Ba'd al-ṭabī'a*, 638-39 = *al-hay'āt*), *Physics* (*al-Ṭabī'a*, 558 = *al-hay'āt*; 760 = *al-hay'āt*) and *Nicomachean Ethics* (*al-Akhlāq*, 545,3; 553,9; 555,13; 581,6; 581,9 = *al-hay'a, al-hay'āt*) prove dominance of *h-y-'* root as corresponding to *heksis*.

70   Contrary to *hexis*, it is difficult to determine any dominant Arabic origin for the words *epitêdeiotês* and *epitedeios*. Words deriving from roots such as *w-f-q, ṣ-l-ḥ, q-b-l* have played a role in rendering these utterances. Moreover, although there is nearly no instance where *isti'dād* is used for *hexis,* the word *epitêdeiotês* has been rendered with words deriving from the root *h-y-'*. (See Proclus, "Faṣl fī al-kawn", 39; Galen, *Maqāla fī anna quwā al-nafs tābi'a li-mizāj al-badan*, 40,5; Porphyry, *Madkhalu Furfūriyūs*, 1084,8). As seen especially in Proclus and Porphyry, the rendering of *epitêdeiotês* like *hexis* as *tahayyu'* and *mu-tahayyi'* together with its use indicating passive power before actuality might have set the ground for the use of the term *tahayyu'* indicating only passive preparation instead of its use in Aristotle. Despite its many renders and the scarce render with *isti'dad*, I think there is a strong correlation between the Avicennan term *isti'dad* and *epitêdeiotês*. A proof supporting my thought is the discussion of *quwwa* and *la-quwwa* in Avicenna's *Categories* V.3 parallel to Simplicius. In the text in which Simplicius carries out the same discussion in Avicenna and uses the term *epitêdeiotês* as exactly *isti'dād*. In the Arabic translation of this text (see footnote 28), which I suppose that Avicenna read it, the term *epitêdeiotês* was most likely translated as *isti'dād*. Even if this were not the case, Avicennan *isti'dād* is on par with the *epitêdeiotês* used here. Besides, Gutas' view that *epitêdeiotês* was rendered as *isti'dād* or *al-quwwa al-isti'dādiyya* in *Ḥawāshī 'alā Kitāb al-Nafs* strengthens the assumption of the correlation between *epitêdeiotês* and *isti'dād*. See Dimitri Gutas, "Avicenna's Marginal Glosses on *De anima* and the Greek Commentatorial Tradition", *Philosophy, Science and Exegesis in Greek, Arabic and Latin Commentaries*, ed. Peter Adamson, Han Baltussen ve M. W. F: Stone (London, 2004), II, 77-88, 82.

Neoplatonist roots, in order to express the meaning of specialized potentiality through various motions.[71]

After showing how Avicenna used *isti'dād* and *tahayyu'* and the Greek-Arabic terminological traditions to which they are related, I will now discuss whether there is any difference between *isti'dād* and Aristotelian *dunamis* and, after this, investigate how Avicenna understood Aristotelian and Alexandrian *heksis* (*al-hay'a* and *al-malaka*) in the sense of "the potentiality that emerges with actuality and is identical to it". This investigation will hopefully also reveal how Avicenna would answer the question of authenticity discussed by Sambursky, Owen, and Todd.

II.2. Two Aspects of the relation of *al-isti'dād* and *fi'l* in Avicenna: *Isti'dāds* as preparedness of the subject and concomitant of the substantial form

At the beginning of this article, I described Aristotle's classification in *De Anima* II.5 of the kinds of *dunamis* around rational powers and their forms of becoming actualized. According to Aristotle, in *Physics* VIII.4, when the will is removed from the equation, the relation of rational *heksis* and *energeia* can be carried to realm of natural powers as well. This approach, when the will factor is left aside, made the actuality of natural powers parallel to the actuality of rational powers in comparison to the second potentiality. The same parallelism is valid for Avicenna as well. Thus, although the subject of the article is not the relation of rational *isti'dād* and actuality, in order to begin the discussion the natural *isti'dād* and actuality I will start with analysing parallel passages taken from Avicenna's *Al-Shifā/Al-Nafs* to *De Anima* II.5.

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71   In a passage in Abū al-Ḥasan al-'Āmirī's Kitāb *al-Taqrīr,* it is seen that *isti'dād* is used instead of Alexandrian *tahayyu'*, thus these two terms are united. Here, al-'Āmirī states that nature, which he considers as a divine power coming from the celestial spheres and effecting the sublunary world, constantly moves the elements that have an *isti'dād* for accepting these natures. (=*lasnā nashukku anna min sha'ni al-ṭabī'at allatī hiye fī al-ḥaqīqati quwwatun ilāhiyyatun sāriyetun fī al-'ālam al-sufliyyi min al-falak al-māili an tuḥarrike al-'anāṣir al-mawḍū'a lahā bi-ḥasabi mā jubilat 'alayhi min al-isti'dādi li-qabūlihā*). al-'Āmirī, "Kitāb al-Taqrīr li-avjuh al-taqdīr", in *Rasāil Abī al-Ḥasan al-'Āmirī,* ed. Sahbān Khalīfāt (Ammān: al-Jām'iat al-Urduniyya, 1988), 334,71-73. The terminology and explanation used here by al-'Āmirī is a perfect expression of Alexander's *divine power* theory which narrates that nature described as divine power caused by the celestial spheres comes to the bodies that are ready (*mutahayyi'*) to accept it. See Iskandar al-Afrūdīsī, *Fī al-'Ināya*, ed. J. Thillet (Éditions Verdier, 2003), 18,12-6 (= *ve li-hādha al-sabab saḥḥa min amri jamī'i mā qiwāmuhū bi-ṭabī'ati anna fīhi shay'an ilāhiyyan hiya muqtaniyatun lahū … fa-'inda hudūthi al-infi'āli al-kāin 'an al-jismi al-awwal alladhī ba'da falak al-qamar li-mujāwaratīhī li al-jism al-ilāhī ve tamāssihī lahū, yata'addā ilā jamī' al-jism alladhī yalīhī min qibali annahū mutahayyiun li-dhālike sahula al-qabūlu lahū …*). When both texts are compared, the unification here is used in favor of the Alexandrian *tahayyu'* and contrary to the Avicennan existence-based explanation of formation, to explain Aristotelian-Alexandrian motion based explanation of formation. On the other hand al-'Āmirī's use of *isti'dād* is not always consistent. While using *isti'dād* in another part of the same work in the sense of *hexis* as one of the two kinds of category of quality (317,44), in another place he uses it in the sense of privation as one of the three principles of a body (309).

Avicenna gives a hierarchy of rational powers, albeit with some revisions, that he inherited from Alexander, Themistius, and al-Fārābī. According to this hierarchy, there are four levels of thought: (1) unconditional propensity (*al-istiʿdād al-muṭlaq*), (2) propensity that makes something capable of something (*al-istiʿdād al-mumakkina*) or intellect *in habitu* (*al-ʿaql bi-al-malaka*), (3) perfection of power or intellect in actuality, and (4) acquired intellect.[72] Unconditioned propensity corresponds to the Aristotelian *dunamis*, and transitioning from this *istiʿdād* to the second is understood as transitioning from being ignorant to being knowledgeable. *Al-istiʿdād al-mumakkina* (intellect *in habitu*) corresponds to *heksis,* and transitioning from this *istiʿdād* to the third degree is understood as transitioning from being knowledgeable to thought.[73] When Avicenna evaluates the difference between the first and second *istiʿdād* in the context of proximity or remoteness to actuality, he calls the first one *incomplete istiʿdād* and the second *complete istiʿdād*. The difference between the two degrees is described as such:

> "The difference between the first and second conception is clear. The first one is like something which you extracted from a depository (*khizāne*) and began to use. The second one is like something you preserve it in yourself (*makhzūnun*) and use it whenever you wish."[74]

As for the difference between the first and second propensity, Avicenna thinks parallel to Alexander and Aristotle and uses approximately the same terminology. As for the difference between the second propensity and actuality, Avicenna says that during the second potentiality we turned away from the hidden intelligible in us (*muʿraḍatan ʿanhu*), and during actuality we directed ourselves toward this intelligible (*lā muʿraḍan ʿanhu*) and started to think on it actually.[75]

According to him the process of thought (*al-fikra*), until it reaches the actual intellection of the intelligible, moves toward possessing a complete propensity to conjunction (*ittiṣāl*) with the real source of the intelligibles. When a person transforms from being ignorant (*incomplete propensity*) to being knowledgeable (*complete propensity*) as a result of learning, in order to actually intellect the intelligible, the presence of required conditions and his returning to the potential intelligible in himself whenever he wishes are not enough:

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72   See. Ibn Sīnā, al-*Nafs min Kitāb al-Shifā*, ed. Ḥasanzāde Āmulī (Qum: Muassasatu Bustān-ı Kitāb, 1429/2008), 66-67, 330-332, 335-338; "Fī taʿrīfi al-quwā al-nafsāniyye alā sunneti al-ikhti~ār", in *Aḥwāl al-nafs*, ed. Aḥmad Fuād al-Ahwānī (Cairo: Dāru iḥyā kutub al-ʿarabiyya, 1371/1953), 65-67.

73   Ibn Sīnā, *al-Nafs min Kitāb al-Shifā* 330-331.

74   Ibn Sīnā, *al-Nafs min Kitāb al-Shifā*, 331,6-8.

75   Ibn Sīnā, *al-Nafs min Kitāb al-Shifā*, 331,10-12.

When it is said that someone knows intelligibles, it means that he can bring its form to his mind whenever he wishes. And this means that whenever he wishes [to bring the intelligible form], he conjuncts with the Agent Intellect and through this conjunction imagines the intelligible by bringing it from the Agent Intellect. So, it does not mean that this intelligible has a presence in his mind and is always actually imagined in it.[76]

According to this explanation, the thought (*al-fikra*) that makes *istiʿdād* emerge is merely directing oneself completely toward the actual-intelligible meaning emanating from the Separate Intellect. Because of this, Avicenna examines the preparatory thought process for the divine emanation as an invocation[77] and request that prepares for the response of Active Intellect.[78]

Similar to the process of thought, which brings about a complete propensity in relation to actuality, the process of change that emerges from the influence of the motions generates only an *istiʿdād* or *al-tahayyuʾ* in relation to the actuality of substantial forms. Thus, the Aristotelian conception of *dunamis* in the sense of a 'potentiality that becomes actual after a change', becomes *istiʿdād* or *al-tahayyuʾ* in the sense of a specified potentiality that only gains a complete relation (*munāsaba*) toward actuality after a change'. With this transformation, *dunamis*, which is identified with *energeia* in the course of generation, is shifted to before the actuality and any implication to actuality is removed from its meaning.

Now, then, what happens to the natural *heksis* that emerges out of a change together with actuality and becomes identified with it whenever there are the required conditions and no obstacles? When we rephrase this question as "What happens to the rational *heksis* that emerges out of education together with actuality and, as long as the person wills and the conditions are met, becomes actual?" then Avicenna's reply is explicit as we see in the passage above: Actualizing your power of thinking of something you know (*malaka*) through applying to the hidden potential intelligible in your mind is not possible whenever you want. The actual thinking of this intelligible is not a result of the potential intelligible hidden in us, but of the intelligible coming from the Active Intellect. Carrying this interpretation – which shows that it is not enough to actualize the intelligible by adding "willing and having the required conditions" to rational *heksis* –, to *natural heksis* necessitates a careful analysis. Apparently, Avicenna does not say anything different from Aristotle and Alexander, who stated that there is no gap between *heksis* and *energeia*: "Once vapour becomes vapour and as long as there is no obstacle, it will be light and it will move upwards". Together with this, when the mentioned proposition is analysed in the

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76   Ibn Sīnā, *al-Nafs min Kitāb al-Shifā*, 337,15-338,1.
77   See Ibn Sīnā, *al-Mubāḥathāt*, #600, #254.
78   Ibn Sīnā, *al-Nafs min Kitāb al-Shifā*, 336,4-6.

light of the Avicennan theory of mixture, the following consequence can be derived: lightness or moving upward are not identical to the substantial form that comes from the Active Intellect in a way to cause the actuality of air; it is, rather, like the relation of rational propensity and actuality, a concomitant of this form. Thus, for the actuality of aforementioned qualities, the mediation of the form that comes from the Active Intellect is required, just like the case of the actuality of thinking the intelligibles.

Thus, Avicenna assigns two roles to the sensible qualities by taking the form that emerges from another principle rather than from the receptive matter: (1) the sensible qualities that play the role of bare propensity before the emanation of substantial forms, (2) transform into concomitant qualities of the substantial forms after the emanation. The first step transforms the Aristotelian *dunamis* into *isti'dād* and *tahayyu'* as bare potentiality, and the second one transforms the Aristotelian *heksis* into a quality that is concomitant of the substantial form.

II.2.1. Complete isti'dād as relation (munāsaba) and pure potentiality

There are a number of steps that make it possible for Aristotle to arrive at a theory in which the recipient is related only to potentiality, and in which actuality is connected to intellectual principles. We can list them as such:

1. Substantial forms cannot come to be from bodies

2. Bodily motions cannot be real causes

3. Motions give rise to potentiality, not actuality

The limits of this article do not allow me examine these principles in detail, and thus I will only briefly discuss them in the context of the relation of propensity with actuality. Avicenna is explicit in that substantial forms cannot come to be from bodies. In this regard, he criticises the views that connect the generation of forms to the movements of heavenly bodies and says this is a weak opinion that cannot be defended on any basis. According to him, the existence of forms can only be due to the finite essential causes that accompany their effects. Causes that are separable from their effects are not real causes; they are, rather, preparatory (*mu'iddāt*) and auxiliary (*mu'īnāt*) causes for matter to receive the forms, like movement. Thus, the real cause of existence of the forms is not bodily motion or another member of the same species, but rather separable Active intellects that are continuously actual and

from which only actuality emerges.[79] As a result, while for Aristotle and Alexander the movements cause the actuality of forms in matter, for Avicenna they play only the role of preparation and cause potentiality, not actuality. In this situation, in which actuality of forms is connected to separate intellects; Avicenna described how the propensities or specified potentialities that emerge as a result of the movements are related to actuality as such:

> And you know that the one does not render [another] one specific, inasmuch as each of them is one, by one thing rather than another that would belong to it. Rather, there is a need for various things that specify. The things that specify matter are the things that prepare it (*mukhaṣṣiṣāt al-mādda mu'iddātun*). The preparer is that through which there comes to be in the thing prepared (*al-mu'iddu huwa'lladhī yaḥduthu minhu fī al-musta'iddi amrun m*ā), something by virtue of its appropriateness for [the reception] of a specific thing is more appropriate than [the reception of some] other thing. This act of preparing renders preponderant the existence in it of the more appropriate [form] from the principles that bestow forms.
>
> If matter remains in the first [state of] propensity (*al-tahayyu' al-awwal*), then its relation to the two contraries would be similar, so that neither one is rendered preponderant unless in terms of a state in which the thing exercising the influence differ. [But then] this difference would also be related to all materials in one [and the same way]. Thus, no one [particular] matter rather than another would be specified by what [this difference] necessitates, except also by something that must exist in that matter. This is nothing other than perfect propensity (*al-isti'dād al-kāmil*), complete propensity (*al-tahayyu' al-tāmm*) being nothing other than the complete relation (*munāsabah*) for a specifi thing –namely, that for which it is prepared. This is similar to water when its warming is made excessive, whereby the alien warmth and the watery form combine, [the former] being remote in relation from the watery form [but] greatly for the fiery form. If that [warming] is rendered excessive and the relation intense, the propensity becomes intense. It thus becomes aright for the fiery form to emanate and aright for this [watery form] to cease.[80]

Two terms brought to our attention in this passage in terms of the Avicennan passive potentiality are *isti'dād* and *munāsaba*. According to Avicenna, because the Active Intellect and prime matter are one, they cannot provide any differentiation of forms in terms of species. In addition, because they cannot provide any differentiation, a specifying principle is required that will provide one meaning

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79   See Ibn Sīnā, *al-Ta'līqāt*, 39. In *al-Ta'līqāt* (s. 41) Avicenna says: "Movements of the causes are not ne-cessitating causes, but they are the preparatory causes for the generated things (*ḥarākātu al-'ilal 'ilalun mu'iddatun lā mūjibatun li al-kāināt*). Moreover, [movements of the causes] are causes for movements of things. The existence-giver essential causes are Active Intellects (*wa inna-mā asbābuhā al-mūjida al-dhātīya al-'uqūl al-fa'āla*)". For his other statements that a form-giver cannot be a body, see: Ibn Sīnā, al-*Mubāḥathāt*, #743, #229, # 231.

80   Avicenna, *The Metaphysics of The Healing*, Eng. trs. Michael E. Marmura,Provo, Utah: Brigham Young Univ. Press, 2005, 335-36; cf. *al-Shifā /Ilāhiyāt*, 411,5-16. Emphasizes in the text are mine.

flowing from the Active Intellect, differentiating in *hayūlā*. This principle plays its role of specifying by preparing (*iʿdād*) matter to receive the substantial forms and is then called "preparer" (*muʿidd*).[81] The preparer prepares matter by making a situation (*amr*) in it that will cause a specialized *istiʿdād* to emerge in order to receive tsdhis special and determined form. Because of this situation, a proximity and a relation (*munāsaba*) occur in matter, i.e. its relation to contrary forms to which it had the capacity to receive disappears, and a relation to only one form emerges. Avicenna calls the absence of such a relation the *first preparation* (*al-tahayyuʾ al-awwal*), which corresponds to the state of general potentiality. In this case, matter cannot take any form and therefore has proximity toward all forms equally. Together with the effect of the principle that establishes the differentiation of heavenly bodies among themselves,[82] any mixture (*mizāj*) [83] removes the equality in *hayūlā* and establishes a situation that maintains the differentiation of relations in matter through special *istiʿdād*s. Eventually, thanks to matter's specialization in full form and possession of a complete propensity, a single and complete relation emerges in it. Avicenna concretizes this schema with the example of water turning into fire. According to this, when water is heated to a very high degree, heat, which is not from the nature of water, attaches itself to water. Heat has a remote relation toward qualities of cold and moist, as well as a proximate relation toward the qualities of heat and dryness. When water is boiled, the qualities cold and moist start to disappear and heat becomes dominant. In this way, a relation toward the form of fire occurs in the thing boiled. Complete propensity is this relation itself.[84]

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81   For preparatory causes: Ibn Sīnā, *al-Shifā/al-Samaʾ al-ṭabīʿī*, 49,1-10.

82   Ibn Sīnā, *al-Shifā /Ilāhiyāt*, IX.5; *al-Ishārāt*, 318,1-5.

83   Ibn Sīnā, *al-Shifā /al-Afʿāl wa al-infiʿālāt,* ed. M. Qāsim (Cairo, 1965), 256,9-14; 260,4; Ibn Sīnā, *al-Shifā/ al-Maʿādin wa al-āthār al-ʿulwiyya*, ed. M. Qāsim (Cairo, 1965), 77-78.

84   Avicenna states in *al-Shifā/al-Samaʾ al-ṭabīʿī* and *al-Taʿlīqat* that this *munāsaba* is a trace or shadow of the form in matter. *(hādhihī al-munāsaba ka-annahā rasmun fīhā ve ẓillu khayālin min al-ṣūra).* See *al-Shifā/ al-Samaʾ al-ṭabīʿī*, 14,4-9; *al-Taʿlīqāt*, 57. The term *trace* or *shadow* used here cannot be interpreted as an "incomplete presence", as found in Neoplatonists or as "chaotic traces" (*ichnê*) in the Platonic sense. The most basic reason, among others, for not being Platonic traces is that Avicennan *istiʿdād*s are temporally originated, not eternal. There are also many reasons why the terms *rasm* and *ẓill* are not used for an incomplete presence of intelligible forms, such as those found among the Neoplatonists. The most important of these is the Avicennan understanding of substantial unity. On the other hand, another reason that could remove such an analogy is Avicenna's statement that the traces of these forms are not only in prime matter, but also in the Active Intellect – contrary to the Neoplatonists, who claim that the original principle of the forms are in the separate intellect. (See Ibn Sīnā Ibn Sīnā, *al-Shifā/Ilāhiyāt*, 410,16-17 = for matter, *fīhi rasmu ṣuwar al-ʿālam al-asfal ʿalā jihat al-ʿinfiʿāl;* for the Active Intellect, *ka-mā anna fī dhālika al-ʿaql aw al-ʿuqūl rasmu al-ṣuwar ʿalā jihat al-tafʿīl*). Avicenna's statement that forms are not only in matter but also in the Active Intellect as mere traces before they become *in actu* in matter stems from his acceptance that *in actu* substantial forms occur only during their union with matter. Traces of these *in actu* forms, as opposed to the separate *in actu* forms, are in the Active Intellect and prime matter, which are both "one". If this trace is directed toward accepting the meaning of existence, it is found in the prime matter as passively (*al-infiʿālī*); if it is towards actualizing an ambiguous shadow in the prime matter than it is found in the Active Intellect actively (*al-fiʿlī*).

If we continue with this example, when water that possesses the qualities of cold and moist is heated by this particular heat, and after it undergoes gradual changes, it possesses the qualities of borderline hot and dry. There, emergent qualities establish a strong natural tendency and relation in matter toward the substantial form of fire. However, despite the state that matter possesses these qualities, it cannot yet be called fire yet; rather, it possesses the propensity of fire. What makes fire come to be is the emanation of form from the Active Intellect to the matter that has the sensible qualities of borderline heat and dryness.

As a result, in terms of natural propensities, necessity and actuality are immanent to the Aristotelian natural *dunamis* and, when conditions are met and as long as there is no obstacle, it emerges through the movements. In contrast to this, according to Avicenna necessity and actuality are not immanent to potentiality and, even when conditions are met and there is no obstacle, movement never causes necessity and substantial actuality; rather, it only causes propensities and special potentialities. Avicenna found an escape from the hypothetical necessity not only in motion, as Hintikka mentions for Aristotle,[85] but also in the generation of natural substances. He also found a way to explain their existence by creating a realm in generation where power is really preserved and manifests itself. In this respect, the theory of possibility in the sense of propensity (*al-imkān al-isti'dādī*), with its aspect that connects existence, necessity, and actuality to only the agent, denies the logical aspect of the principle of temporalized plenitude,[86] which can be described as "all potentialities eventually must be actualized within infinite time."[87] In this way, this conception of natural propensity proves to be a successful application of the Avicennan theory of possibility (*al-imkān*), which removes the horizontal modal necessity and establishes the necessity on the vertical dimension,[88] in the realm of natural powers.

II.2.2 Isti'dāds as a concomitant of the form

A careful eye will realize that Avicenna's explanation of the relation of sensible qualities of the elements and their substantial forms seems to differ radically from the traditional Aristotelian theory of the four elements. According to Avicenna,

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85   Hintikka et all., "Aristotle on Modality and Determinism", 66-70.

86   Allan Bäck, "Avicenna's Conception of Modalities", *Vivarium* 30/2 (1992): 247.

87   For description of this principle of Lovejoy's, in the context of temporal modality, presented in *The Great Chain of Being* (Cambridge, Mass., 1936) see: Hintikka, *Time and Necessity*, 93-113; Simo Knuuttila, *Modalities in Medieval Philosophy* (London, 1993), 1-38.

88   Taneli Kukkonen, "Infinite Power and Plenitude: Two Traditions on the Necessity of the Eternal", *Medieval Philosophy and the Classical Tradition: In Islam, Judaism and Christianity*, ed. John Inglis (Routledge, 2013), 160.

Aristotle's followers identified such qualities as cold-hot-moist-dry, motion upward and downward, and light and heavy as forms of the elements.[89] In contrast to this, Avicenna says that sensible qualities cannot be accepted as substantial forms. The place where we most explicitly observe this step, which will give the gist of his theory of *istiʿdād*, is his theory of mixture.

For Avicenna, most of the problems about the theory of mixture arise from its definition. In fact, the problems of definition that he inherited from his ancient predecessors originated from Aristotle's definition of mixture. In order to find its correct definition, Aristotle wants to separate it from change and generation as well as to reach an explanation that allows the components that make up the mixture to return to their previous states once the mixture dissolves. In pursuit of this goal, he says that qualities do not disappear totally in the mixture, but that they turn into potential. According to him, when two elements are mixed their common qualities play the role of matter, and their contrary qualities mutually interact until reach an equilibrium between their powers. Thus, as none of them become dominant, they do not affect one another and eventually go back to their own potentialities and bring about a new quality.[90]

The Aristotelian approach, which claims that qualities are preserved in mixture potentially (*dunamei*), created a number of problems in terms of the differentiation of form and qualities as well as of the emergence of secondary mixtures. In order to overcome the first problem, later commentators brought new interpretations of what the preserved thing in mixture is and how that thing is preserved. Galen, who defends the statement that qualities are present potentially, and Alexander, who says that the qualities and forms are present in the state of tempered actuality, and Philoponus, who states that only qualities are in state of tempered actuality, are among such commentators.[91] Avicenna, however, claims that in the mixture forms

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89   See: Ibn Sīnā, *al-Shifā/al-Kawn wa al-fasād*, 128,15-130,1; 130,8-131,10. For modern discussions regarding what could correspond to the forms of elements, if they have any, in Aristotle, see Mary Louise Gill, "The Theory of the Elements in *De caelo* 3 and 4", *New Perspectives on Aristotle's De Caelo*, ed. Alan C. Bowen ve Christian Wildberg (Leiden: Brill, 2009), 139-161; Sheldon M. Cohen, "Aristotle on Elemental Motion", *Phronesis* 39 (1994): 150-159; Sheldon M. Cohen, *Aristotle on Nature and Incomplete Substances* (Cambridge: Cambridge University Press, 1996), 33-55. In the case of Aristotle, some commentators debated whether elements are truly substances and whether they have substantial forms. However, even if he accepts the elements as substances, here the elements are only an example for Avicenna. Thus both the "*istiʿdād* as a concomitant of form" theory and the criticisms he directs to the earlier philosophers regarding this theory stretch from the basic elements to the most complex substances.

90   Aristotle, *On Generation and Corruption*, trs. H. H. Joachim (Princeton: Princeton University Press, 1991), 1.10, 328b20-24, 328a28-30, 328a11; For Aristotle's theory of mixture see: Theodore Scaltsas, "Mixing the Elements", *A Companion to Aristotle*, ed. Georgios Anagnostopoulos (Oxford: Wiley-Blacwell, 2009), 242-260; John M. Cooper, *Knowledge, Nature and the Good, Essays on Ancient Philosophy* (Princeton: Princeton University Press, 2004), "Two Notes on Aristotle on Mixture", 148-174.

91   For the approaches mentioned, see: de Haas, "Mixture in Philoponus", 21-46.

are preserved actually and qualities are tempered.[92] He remarks that the earlier commentators could not differentiate between the intelligible form and the sensible quality and that they presumed the sensible qualities (e.g., cold-hot-moist-dry, light and heavy, upward and downward movements) to be substantial forms. Thus, they said that only this or that form of qualities is preserved in mixture, as if the substantial form emerges due to the physical interactions among these qualities.[93] Although Aristotle thinks that the potential qualities are preserved in the mixture, Avicenna presents a peculiar interpretation that places Aristotle in such a position that defends his own theory and expresses his view on the commentators as such:

> [Those who say that forms are not preserved in the mixture] think that Aristotle meant the dispositional powers (*al-quwwā al-istiʿdādiyya*) by the word "power" and if the first matter could be preserved in extracted state [from forms], mixture which does not include corruption aside, they assumed that also the dispositional powers – that a thing is called fire, earth, or something other than these in potentiality because of these dispositional powers – of the elements [in matter] too will not dissolve. If this were the case, what would this word [the explanations] be good for?[94]

The question that Avicenna directs to his Greek predecessors reflects the essence of his notion of substantial generation, because this passage includes strong implications of what he expects from the explanations on the physical basis of generation in the sense of losing one form and gaining another form. Now, what does he want these explanations to explain and, at least for him, what kind of generation will this so-called explanation propose? According to him, his predecessors assumed that the thing preserved in the mixture is the dispositional powers or propensities in matter, instead of the substantial form. They then reached an assumption that is of no benefit to any account of generation: If the first matter could exist with propensities alone, without including any forms, then even at the level of mixture, which is the only physical process for the coming to be of a new substance, the propensities would never have disappeared because they are not subject to corruption in the course of the mixture. However, according to Avicenna, generation is all about emerging of one propensity after the disposal of contrary propensities in matter and emanation of proper form for this remaining propensity from Active Intellect. If propensities remain as they are without corruption, then we cannot talk about any generation. Avicenna, who separates form from propensity, thinks that an account that leaves forms outside of explanation and accepts mere propensities, i.e. borderline sensible qualities, is "useless". This is because those who defend this type of explanation could not separate substantial form and perfections

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92   Ibn Sīnā, *al-Shifā/al-Kawn wa al-fasād*, 131,12-13.
93   Ibn Sīnā, *al-Shifā/al-Kawn wa al-fasād*, 128,15-130,1; 130,8-131,10.
94   Ibn Sīnā, *al-Shifā/al-Kawn wa al-fasād*, 129,9-14.

of the categories of place, quality, and quantity, which come to be as a concomitant of substantial form.[95] According to Avicenna, the substantial form is the principle of actuality of secondary perfections that come to be after the substantial form and, in contrast to these sensible qualities, it is intelligible.[96] Qualities such as cold-hot-dry-moist, light-heavy, upward and downward movement are "accidents that emerge as a concomitant of this formal nature as long as there is no obstacle (*a'rāḍun talzamu hādhihi al-ṭabī'a*).[97] Avicenna writes that when this differentiation is ignored, there is a risk of reducing substantial forms to accidents. And those who make this mistake, already without differentiating the nature as the principle of movement and what makes a thing itself, have raised the nature, which is the principle of motion and rest, and the concomitants of this nature up to the level of the principle of essence.[98] In *Al-Shifā/Samā' al-Ṭabī'ī*, Avicenna refers to these philosophers by the insulting term "a group among researchers," those who claim that the borderline qualities of the first potentiality, after a change through movement, become actualized and identified with substantial form and that there is only a conceptual difference between the actuality of substantial form and the actuality of these qualities. In contrast to the group that identifies the qualities that emerge as a result of the mixture with substantial form, Avicenna centralizes the intelligible form that emanates from the Active Intellect and evaluates the pre-emanation borderline qualities as propensities (*isti'dād-tahayyu'*) and, after emanation, qualities in actuality as accidents or dispositions (*al-hay'āt = heksis*) that emerge as a concomitant of the substantial form.

Conclusion

Avicenna's theory of natural powers contains important transformations in comparison to Aristotle's. The first one is the shift in terminology or scientific jargon. The terms *isti'dād* and *tahayyu'*, which express a passive potentiality that precedes actuality, cannot be seen in any of the Greek-Arabic translations of Aristotle's texts. The use of *tahayyu'* in the translation of Alexander's *Quaestio* III.3 (*De Sensu*) for *heksis* and its derivations, in contrast to Avicenna's usage, emerges after the actuality and is necessarily related to actuality. Together with this, as Sambursky did for Philoponus on the usage of *epitêdeiotês,* seeing the innovation and change of scientific jargon as a proof for transformation in the Aristotelian *dunamis* is not sound. This terminology can only be claimed to be a proof when the real transformer of Avicenna in Aristotelian power is read as a reflection of the divisions of essence-existence and

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95   Ibn Sīnā, *al-Shifā/al-Kawn wa al-fasād*, 129,15-130,1.
96   Ibn Sīnā, *al-Shifā/al-Kawn wa al-fasād*, 130,8-131,10.
97   Ibn Sīnā, *al-Shifā/al-Samā' al-ṭabī'ī*, 36,7-9.
98   Ibn Sīnā, *al-Shifā/al-Samā' al-ṭabī'ī,* 36,7-9.

possibility-necessity. Avicenna, who evaluates necessity as a concomitant of existence and possibility as a concomitant of essence, asserts that the essential possibility of essences, which bear equal possibility to existence and nonexistence, require a subject (*hayūlā* in sublunar worlds). In this respect, essences possess essential possibility, for they bear possibility to existence and nonexistence, and also possess a possibility in the sense of propensity attached to their privation in the subject of their future presence. Possibilities in the sense of propensities of essences in their subject do not include the principle of form, actuality, necessity and existence, for necessity is directly attached to existence, and because of their essential possibility essences need an efficient cause as a giver of existence. Thus, actuality in the sense of form, necessity and existence is wholly possessed by the efficient cause, whereas every kind of passive natural power is nothing but mere potentiality and preparation for receiving the actuality coming from the agent. Consequently, Avicenna's reason for transmitting this new and more subtle terminology about powers in comparison to Aristotle's *dunamis-heksis* is his theory of possibility and necessity, which caused him to reinterpret the Aristotelian *dunamis-heksis*. During this reinterpretation he combined *tahayyu'*, which is connected to the Aristotelian *heksis*, and *isti'dād,* which is connected to the Neoplatonist *epitêdeiotês,* for his own purposes and then used them in such a way that they expressed a single meaning. This new meaning caused both *isti'dād* and *tahayyu'* to bear no conceptual kinship to *epitêdeiotês,* which means the Neoplatonist "incomplete power" in the sense of incomplete presence of intelligible form. He did this because, in contrast to the Neoplatonists and in line with the Aristotelian understanding, he wanted to preserve the unity of sensible substances. However, in contrast to Aristotle he wanted to reach to not only motion, but also to the existence-giving causes at the same time.

In this form, the Avicennan theory of *isti'dād* engenders two important transformations in the Aristotelian theory of *dunamis-heksis*. The first one removes the hypothetical or 'horizontal' necessity during the transmission from first potentiality to actuality (*generation*) and posits that each movement and change that will affect matter, which possesses first potentiality, can only create a preparation and relation to form. This step transforms the Aristotelian theory of transmission from first potentiality to first actuality, as in "potentiality becomes actual through movements as soon as the conditions are met and as long as there is no obstacle" into "potentiality, as long as conditions are met and there is no obstacle is specified through movements and it gains only complete relation toward actuality." In this way, Avicenna reaches a conception of potentiality that does not include any necessity in respect to substantial generation. His second transformation concerns the notion of natural *heksis* and comes out as a requirement of the first transformation. Because powers are not identified with actuality in any form during the transmission from first potentiality to actuality, the natural *heksis* (*hay'āt-ḥālāt*), which is merely the

realization of complete propensity of the first potentiality toward actuality, also does not identify with actuality or substantial form in any form. We can observe this transformation best in his theory of mixture, which separated the sensible dispositions and states explicitly from substantial forms and interpreted them as mere concomitants. Just like the first step, here too power gains its actuality by connecting to the intelligible principle and contains no necessity on its own.

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