

## DEFINITIONS: DOES DISJUNCTION MEAN DYSFUNCTION?\*

Many who doubt its analytic status nonetheless agree with the claim that a spinster is a woman of marriageable age who has not yet married. They are also likely to agree that this claim has the look of a definition. After all, it has the following four features:

- (1) Extensional adequacy: It cites a particular condition that is met by all and only things of the kind being defined (the spinsters, in this case).
- (2) Criterial adequacy: This condition is the one in virtue of which those things count as things of that kind.
- (3) Conjunctiveness: If this condition is reasonably construable as a logical construction out of other simpler conditions, then each of those simpler conditions is necessary for something to count as a thing of the kind being defined and those conditions are also jointly sufficient for something to count as a thing of that kind. (So, for instance, being of marriageable age is necessary for being a spinster, as is being a woman and so on, and anything which meets all these conditions is a spinster.)

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(4) Motivational adequacy: There is some background theory or description of a well-established practice which explains why it is reasonable for one to be interested in whether a thing meets the proposed condition or why there is a recognised category of things which satisfy that condition. (In the case of spinsters, it is presumably a piece of social history or a description of certain social practices which explains why people are interested in marriage customs.) Whether a definition is motivationally adequate depends on the role it plays in our categorising or theorising. Our definition of a spinster is motivationally adequate when construed as part of some people's cultural legacy, but it almost certainly is not when construed as part of contemporary legal theory.

We do not claim that listing these four features is an especially illuminating or even an adequate way of describing what a definition should look like. We do not claim that these features determine necessary and sufficient conditions for the adequacy of a definition. We suspect, though, that if a definition lacks one or more of these features, there is a corresponding respect in which we find that definition problematic.

For instance, we prefer an equilateral triangle to be defined in terms of the length of its sides, rather than, say, the size of its angles. We can describe this preference by appealing to a feature from our list. It is true, indeed necessarily true, that an equilateral triangle is a plane three-sided figure with three  $60^\circ$  interior angles. However, this definition is criterially inadequate. Likewise, if Putnam is right, we should not define a tiger as a large striped feline beast of prey, or even as a beast of prey which is actually large, striped and feline: these definitions miss the fact that a tiger gets to be a tiger in virtue of its genetic profile and its ancestry. If Putnam is right, this definition

is criterially inadequate - just like the earlier definition of an equilateral triangle - and maybe this would be a good way of describing what is wrong with it.

Meanwhile, suppose we stipulated that:

**A heagly thing is any thing that is both heavy and ugly.**

This definition has the first two features on our list, extensional adequacy and criterial adequacy, since we are entitled to categorise things in idiosyncratic ways and make use of those categories. Our definition also has the third feature: it is conjunctive. But it is gratuitous: there is no obvious reason for regarding all heavy, ugly things as tokens of a special type of thing. We can gloss our discontent about this by noting that this definition is motivationally inadequate.<sup>1</sup>

The oft-criticised definition of knowledge as justified true belief is extensionally inadequate, and hence criterially inadequate. The persistent failure to repair this admirably conjunctive definition in a way that meets with general approval has caused some to speculate that knowledge is, after all, of no theoretical interest.<sup>2</sup> We could gloss this speculation as the worry that any definition of knowledge that meets the other three conditions will turn out to be motivationally inadequate.

Our concern in this paper is with definitions that are not conjunctive. In particular, our concern is with definitions of things of a kind K which allege that there is a bunch of conditions, each of which is sufficient, but not necessary, for bestowing K-hood. Definitions of this kind, call them “disjunctive,” are often proposed for kinds of things that interest us, but they usually draw fairly muted applause. Many treat them as provisional, to be endured, rather than celebrated. Surely, it is thought, they do not provide all one might want from a definition.

In some cases, this lack of enthusiasm is clearly appropriate. Suppose we stipulated that:

**A parsket is anything which is either a parsnip or a basket.**

Just like our definition of a heagly thing, this one is extensionally and criterially adequate. But just like that conjunctive definition, this disjunctive one is gratuitous, as far as we can tell. It is motivationally inadequate. Hence we need not invoke its disjunctiveness in order to explain its inadequacy. Or consider:

**Spouse: husband or wife.**

Meeting the condition proposed in this definition ensures that one is a spouse, but there is something more revealing that we can say. A spouse is something more like a marriage partner, with husbands and wives being two sorts (perhaps the only two sorts) of spouse. So this definition is perhaps extensionally adequate, but it is not criterially adequate. Again, there is a problem with it, but we can diagnose that problem without reference to its disjunctiveness.

In other cases, though, it is not obvious that any improvement on a disjunctive definition is in the offing and it is also not obvious that any of our other three features - extensional adequacy, criterial adequacy, or motivational adequacy - is lacking. In such a case, one might wonder whether the usual lack of enthusiasm for disjunctive definitions is warranted. In general, the question that concerns us is this: what is so great about conjunctiveness, or, at any rate, what is so mediocre about disjunctiveness? The other three features on our list seem like features you ideally want a definition to have, but why require, or prefer, conjunctiveness as well? Below, we consider whether there really is any special problem for disjunctive definitions. We find that sometimes there is not, but sometimes there is. In brief: there is no problem if we are defining

something which is part of an everyday folk classification of things, but there is a problem if we are defining a theoretical posit. In the latter case, there is frequently a good reason to expect that any disjunctive definition will be motivationally inadequate. This suggests a principled way of distinguishing good from bad disjunctive definitions. We will argue, however, that it is of limited use because often we cannot tell whether what is being defined is posited by a folk taxonomy or by a fully-fledged theory.

Let us consider an area in which disjunctive definitions, though hard to endure, are also hard to supplant. Many definitions of art are disjunctive and although others are not, some theorists hold that no other style of definition can do better.<sup>3</sup> The simplest sort of disjunctive definition proposes a complex sufficient condition for K-hood of the form:

**$C_1$  or  $C_2$  or... or  $C_n$ ,**

where each of the  $C_i$ 's is a simple condition. Vladislav Tatarkiewicz's definition of art is more complicated than this:

**“A work of art is either a reproduction of things, or a construction of forms, or an expression of experiences such that it is capable of evoking delight, or emotion, or shock.”<sup>4</sup>**

Tatarkiewicz's discussion makes it clear that we are supposed to read this as having the form:

**$(C_1$  or  $C_2$  or  $C_3)$  and  $(C_4$  or  $C_5$  or  $C_6)$ .**

On the face of it this is a conjunctive definition. But each of the two complex necessary conditions for art status is disjunctive; each of them can be met in one of three distinct ways. So

the definition can be rewritten in a way which reveals its disjunctiveness, in the form:

**(C<sub>1</sub> and C<sub>4</sub>) or (C<sub>1</sub> and C<sub>5</sub>) or (C<sub>1</sub> and C<sub>6</sub>) or (C<sub>2</sub> and C<sub>4</sub>) or (C<sub>2</sub> and C<sub>5</sub>) or (C<sub>2</sub> and C<sub>6</sub>)  
or (C<sub>3</sub> and C<sub>4</sub>) or (C<sub>3</sub> and C<sub>5</sub>) or (C<sub>3</sub> and C<sub>6</sub>).**

Opponents of this sort of approach feel that artworks are being represented here as a less unified kind than they surely are. That seems like a problem if we think that art is a robust, well-motivated category, grounded in reality or in our practice.

More complicated still, but still fundamentally disjunctive, are cluster definitions. A cluster definition presents a number of conditions which, in various combinations, constitute sufficient but not necessary conditions for K-hood.<sup>5</sup> For example, Berys Gaut gives a list of ten features none of which is necessary for something's being art, and tells us that something can qualify as art by having all of them or by having various combinations (although not just any combination) of fewer than all of them. This is a compact way of stating a very long disjunction.<sup>6</sup> Again, the worry is that the definition merely glues disparate things together, this time in bundles. So, the thought is, either it is inadequate as a definition of art, or else there is really no one kind of thing to be defined. Again, is there any justification for such scepticism?

Another type of disjunctive definition of K-hood presents paradigm instances of K-hood and then goes on to say that any item counts as a K so long as it satisfies enough of the necessary conditions for paradigm K-hood. A paradigm chair has four legs and a back and is for sitting on, but something could count as a chair if it lacked four legs, as a swivel chair does, if it was not for sitting on, as might be the case with a chair that is a work of art, and possibly even if it lacked a back.<sup>7</sup>

Yet another sort of disjunctive definition is the recursive sort. Historical definitions of art are an example: something is an artwork if and only if it is properly causally connected to earlier artworks, which in turn are artworks because they are properly causally connected to still earlier artworks, and so on, until we reach a characterisation of the earliest artworks of all. At this stage we insert a clause about what make these earliest artworks artworks. Hence an item gets to be an artwork either because it is [insert here whatever you think is the defining characteristic of the earliest artworks], or because it is appropriately causally connected [insert here your favoured account of the appropriate causal connection] to the earliest artworks, or because it is appropriately causally connected to artworks which are appropriately causally connected to the earliest artworks, and so on.<sup>8</sup>

Before clarifying and addressing our worries about all of these sorts of definition, let us be clear about the notion of definition that has been in play throughout. By a definition, we mean a statement which purports to tell us what it takes for something to be a thing of a certain kind. It is things, not expressions or concepts, whose definition interests us. We could have run the discussion by talking about definitions of expressions, and if you hold that there can only be definitions of expressions, symbols or concepts, you can certainly recast the discussion accordingly: you can take it that there are symbolic representers of the kinds of stuff that concern us and that we are exploring what it takes to define such representers adequately. However, this introduces distracting complications. Had we gone this way, we would have had to address the question of whether an identity sign flanked by synonyms counts as a good definition and we would have had to distinguish between definitions which stipulate a meaning for an expression

and definitions which aim to report an existing usage of an expression. As things stand, the claims we are calling “definitions” all purport to specify what it takes for something to be a thing of some particular kind, where the thing in question could be abstract, physical or mental, real or imagined. The puzzle about disjunctive definitions is that, at least sometimes, their mere disjunctiveness seems like a drawback: there is resistance to the idea that the condition in virtue of which something counts as a K could truly be disjunctive. Is such resistance warranted?

Our answer draws on the idea that there are two contrasting sorts of reason one might have for offering definitions. On the one hand, there are lots of kinds of stuff that we refer to or make use of in our lives. It is part of our practice to notice certain things and to group them in certain ways. Sometimes our ways of classifying things depend on their appearance; sometimes they depend on their function; sometimes they depend on our community’s evolving ideas about how reality itself is organised. But ultimately, many of the ways we categorise things are due to our own or our community’s entrenched and evolving classificatory practices. We have, for instance, a practice of grouping certain things together and calling them jazz. Unsurprisingly, we sometimes take an interest in what it takes to be a thing of one of these practice-mandated kinds. What, we might ask, is jazz? Hence, we offer definitions which are adequate to the extent that they satisfactorily describe the stuff picked out by the relevant community’s relevant identificatory practices. To a first approximation, a definition of jazz ought to count something as jazz if and only if the community regards it as jazz.

On the other hand, there are lots of kinds of stuff that are posited by our systematic theories of the way reality should be taxonomised in order to be understood. Of course, these theories are



just parts of the legacy of our institutions, so it might be unclear why their classifications should be treated separately from those we have just discussed. However, these theories and the classificatory practices they mandate are only of interest to us insofar as they meet scientifically acceptable standards for serving such scientific goals as prediction, explanation, theoretical unification and comprehension of reality in reality's own terms. So, for instance, scientific realists assume that there are facts about reality that hold independently of how reality presents itself to us on a day-to-day basis, and it is those facts which the theories aim to capture. When we say that there is no phlogiston or caloric, but that there is oxygen and there are genes, we are not primarily making claims about the ontological commitments of our social practices; we are, according to the realist, positing furniture for the world. Definitions of the stuff posited by our theories are often theory-internal; we define one theoretically posited kind in terms of others. The realist would like the relationships among the entities posited by a single theory to track the objective relationships among kinds of stuff which hold independently of the community's ordinary identificatory practices. The realist will, in some extra-theoretic sense, regard any particular set of theory-internal definitions as adequate to the extent that they satisfactorily describe the nature of stuff that furnishes the world, in terms of conditions which are met by that stuff, independently of the ways in which human observers and cognizers interact with it.<sup>9</sup> Non-realists (instrumentalists, constructive empiricists and others) make different remarks about the roles of theoretical posits, but typically, those roles will still be regarded as significantly different from the roles of institutionally-mandated kinds.

Here are our two central claims. Insofar as a definition of K-hood should track our existing identificatory practices, that definition could be perfectly adequate even if disjunctive; but

insofar as a definition of K-hood should track facts about reality without being beholden to our pre-existing identificatory practices, a conjunctive definition is to be preferred. We will argue for each claim in turn.<sup>10</sup>

First, why is disjunctiveness no slight on a definition which is intended to track our identificatory practices? Elsewhere, we have pointed out that we should expect some of the rules we implicitly follow when classifying things as, say, jazz or non-jazz to be “horrendously complicated and gerrymandered.”

[O]ur informal, everyday classificatory practices evolve over time in response to changing circumstances and are not subject to careful review by the philosophy department or the Crown Law Office. The question of whether to include a particular musical [work or] event among the jazz may well depend on vagaries: what were the journalists working for *Downbeat* magazine most interested in during the late '50s? What kinds of music did most of the jazz players from the '30s move on to when the big bands disbanded? Perhaps the best definition of... *jazz* will be a motley disjunction of conditions.”<sup>11</sup>

We suspect that it will be either a long disjunction of conditions, each of which identifies a distinct genre (like swing, or bop), or else a cluster definition built out of conditions which each identify a musical or contextual property (like blue notes, or the influence of Miles Davis).<sup>12</sup> Strictly speaking, we are here defining the kind of thing that is determined by the concept of jazz that operates in the community at the moment. In 1950, before the advent and exclusion of rock 'n' roll and before the inclusion of hard bop and some of the mambo, the community's concept of jazz was different and covered a much less diverse range of stuff. Who knows what

new sorts of stuff will count among the jazz fifty years from now? The crucial point is that our classificatory habits often develop in the wild in the community and are subject to sundry pressures, amongst which taxonomic coherence probably exerts comparatively little pressure. (In much the same way, spoken French changes haphazardly with little regard to the regulating protests of the *Academie Française*.) Hence, in the case of jazz (and sport and religion and much else), there are likely to be no unifying commonalities and we must characterise the kinds in question by identifying all the different sufficient conditions and gluing them together.

However, this verdict does not apply to all institutionally-mandated kinds. Disjunctive definitions of chairs, letterboxes, beds, toothpicks and mental states are almost certainly criterially inadequate; in each case a more unified account is available which picks out the condition in virtue of which the things in question count as things of the kind in question. To be preferred in such cases are definitions in terms of some function which they perform, or are designed to perform, or are well-adapted to performing, or once performed when things of that kind first came on the scene. (With enough hedging, surely we can accommodate Rauchenberg's bed, toothpicks with sausages on them and what David Lewis calls "mad pain".<sup>13</sup>) Even if there were only a small number of ways to make chairs, it would probably be better to define chairhood with reference to some functional role than it would be to build a disjunctive definition from an exhaustive list of sufficient conditions. Even so, we think that in some cases - and jazz is probably one - a disjunctive definition will be adequate.

One might object that a disjunctive definition which is intended to report the deliverances of our identificatory practices can always be bettered by a definition in terms of some function which

things of the kind to be defined serve or could serve, or in terms of some distinctive way in which certain members of the community treat or respond to things of that kind. We will explore only one version of this objection, but we think that the morals we draw can be generalised.

According to this version of the objection, one should always aim for response-dependent rather than disjunctive definitions. One can, for instance, define jazz by saying that something is an instance of jazz if and only if suitable subjects under suitable circumstances would respond in a certain way (the jazzy way) to that something. Response-dependence already pays its way; it is a promising approach to understanding the so-called secondary qualities, and perhaps morality. So the fact that notions like the suitability of a subject or of a circumstance need to be fleshed out in order to make response-dependence fly is not really a problem. Better: it is a problem that needs to be solved anyway. The same goes for the worry that the jazzy response is woefully under-specified, so that the definition looks unpleasantly circular. Our objector urges that once these imperfections are ironed out, a response-dependent definition of jazz reports our identificatory practices far more accurately than any disjunctive definition can, since those practices are tied up with the way members of the community respond to samples of jazz. This in turn means that a response-dependent definition is more likely to be criterially adequate. Ultimately, things count as jazz in virtue of the fact that we count them as jazz.

We are not persuaded that response-dependence creates problems for our central claims. We have three reasons. First, one must respect the distinction between a kind of stuff and our concept of that kind of stuff. The most illuminating account of our concept of jazz might well be response-dependent. Such an account may well do the best job possible of describing the

contents of our thoughts about this kind of thing or the properties of things of that kind that are deemed salient by the relevant community. But if we are interested in describing jazz itself, the disjunctive definition might do at least as good a job. A response-dependence approach to the concept of jazz yields the result that a thing counts as a sample of jazz if and only if a particular sort of subject in a particular sort of circumstance responds to it in a particular sort of way. An account of what it is for something to *be* jazz, however, tells us what jazz itself is like. As it happens, we only regard all the jazz as being the same sort of stuff because of our practices, but that does not mean that the facts which make it jazz - the kind of stuff it is - are facts about our practices. True, instances of jazz have certain features in virtue of which beings like us respond to it in a certain way, and this is why we lump it all together. But if the story we told earlier is right, this causal power that samples of jazz possess is had by certain stuff because that stuff is either swing, or bop, etc, or because it satisfies some combination of conditions like prominence of blue notes, heavy Miles Davis influence, etc. Hence, if asked what jazz is, someone who takes the question seriously and truly understands the situation will reply by offering some approximation to such a definition.<sup>14</sup>

Here is a second reason for holding out against the response-dependence objection. Although we do not rule out the possibility that there are adequate response-dependent definitions of certain kinds of stuff, as well as of *concepts* of certain kinds of stuff, there are kinds for which no adequate response-dependent definition, or anything like one, is available. Jazz is one such kind. There is surely no distinctive function or human response peculiar to all and only the jazz, in terms of which a criterially adequate definition of jazz itself can be framed. We may grant that suitable subjects under suitable circumstances characteristically respond to instances of jazz by

regarding them as jazz, by searching for information about them on websites devoted to jazz and so on. However, this does not give us a criterion in virtue of which the stuff responded to in this way gets to be the jazz. On the contrary, as noted in the last paragraph, the fact that the stuff in question is jazz *causes* the response.

Here is our final reply to the response-dependence objection. Even if there is an adequate response-dependent definition of some institutionally-mandated kind of stuff, this does not mean that every disjunctive definition of that kind of stuff is criterially inadequate and it certainly does not mean that, whenever we have a disjunctive definition of some institutionally-mandated kind, it would be better to have a response-dependent definition of it. Our claim is that disjunctive definitions of such kinds are sometimes adequate and that in some cases, they will prove at least as good as any response-dependent, functional, or similar sort of rival.

Consistent with this claim, there will sometimes be disagreement about whether a particular institutionally-mandated kind can be defined disjunctively. Consider the following disjunctive definition of jade.

**Jade: anything which is either jadeite or nephrite.**

If one wants to define jade in terms of stable, well-understood types of stuff which can be identified or described without presupposing descriptions of jade, and if one is convinced that nothing other than jadeite and nephrite counts as jade, one might well rest content with this definition. However, this might be the wrong picture. The folk, both ancient and modern, may well regard any substance as jade if it is hard, carvable, green stone - or if the appropriate experts regard it as such. There may or may not be other substances with the relevant profile, but to hold

that only jadeite and nephrite qualify as jade might be to miss the feature that is tracked by the folk practice. The mere possibility that there could be some other substance which, without error or a change in the folk concept, would be regarded as jade if it were discovered, suggests that a response-dependent or functional definition of jade should be favoured and that a disjunctive one would be criterially inadequate. So we should regard jade as a case where it is controversial whether a disjunctive definition is adequate.

Typically, of course, squeamishness about the disjunctive definition of jade stems, not from the lure of response-dependence or the thought that jade might be a functional kind, but from the suspicion that our practice of lumping all the jade together is an embarrassment: jade is not, as they say, a natural kind. Philosophers who discuss this definition usually do so in order to illustrate the gulf that can open up between our identificatory practices and the way the world is organised independently of those practices. Clearly this is a worry, not about the definition, but about the positing of jade. If a disjunctive definition of jade is the best we can come up with, runs the thought, then so much the worse for any theory that posits jade. The response to this thought is, of course, that jade is here to stay, if you regard it as a practice-mandated kind rather than the posit of a theory which aims to carve reality at any joints that reality might have. However, this squeamishness regarding the disjunctive definition of jade would in fact be justified if jade were a theoretically posited kind. Or so we argue now.

Why, when K is a kind posited by some theory which aims to track reality without deference to our identificatory practices, is it reasonable, all things being equal, to seek a conjunctive definition of K-hood and to distrust a disjunctive one?

Suppose you propound a systematic account of some part of reality, in terms of objects, properties, kinds and laws which are not mere projections of existing human identificatory practices. Whether your topic is mathematical objects, subatomic particles, geological formations, or the musical instruments of the world, you will probably try to posit kinds of stuff in such a way that every instance of one of your kinds exhibits the same sorts of theory-relevant behaviour as every other instance of that kind. Individual electrons can differ from one another in various ways, but if you posit electrons, this is probably because, in a class of cases and bunch of respects that matter for your project, one electron is much like any other: it plays the same sort of causal role, has the same intrinsic properties and dispositions, as any other; its presence in a system generates the same sorts of consequences as would the presence of any other electron in that system, or in any relevantly similar system.

A conjunctive definition of K-hood tells us that any thing which meets all of the proposed necessary conditions is a K and that nothing else is a K. Presumably each necessary condition corresponds to a theoretically interesting property, so the definition tells us that the Ks just are the things which share a certain bunch of properties that matter to the project in hand. The fact that these properties are shared by all the Ks means that all the Ks exhibit interesting similarities in disposition, role or behaviour. In short, our conjunctive definition tells us that the Ks are a bunch of things which are all much the same as one another in a number of specified, interesting ways. Typically, this is just what we want from a theoretical posit.

On the other hand, a disjunctive definition of K-hood tells us that there is more than one



condition which suffices to make something a K and that anything which meets any one of these conditions is a K. Presumably each sufficient condition corresponds to a theoretically interesting property, so the definition tells us that any thing which has one of these important properties is a K. Without further information, such a definition tells us nothing about the interesting similarities of behaviour, role, or disposition that we can expect from an arbitrary assortment of Ks. So the definition does not give us the clue that the conjunctive definition gives us about why it is of theoretical utility to throw all the Ks into one basket. Maybe such a clue is hiding elsewhere in the theory; perhaps we know enough about all of the diverse sufficient conditions for K-hood to draw conclusions about similarities among the Ks and hence to justify our decision to include K-hood in our taxonomy. But, on the face of it, a conjunctive definition does a better job of giving us something we typically want from a theoretical posit: a story about the interesting similarities that motivate the decision to include K-hood in our taxonomy.

As noted, though, this assumes that each of the necessary conditions included in the conjunctive definition corresponds to a theoretically interesting property whose presence constitutes the satisfaction of the condition. A necessary condition whose satisfaction is constituted by the *absence* of a theoretically interesting property detracts from the motivational adequacy of a conjunctive definition of a theoretically-positing kind. Defining a scalene triangle as a triangle which is not equilateral and not isosceles invites puzzlement. Why lump together, for theoretical purposes, all the triangles which fail to satisfy two theoretically interesting conditions? What, in and of itself, is theoretically interesting about doing that? If that is the best we can do, we might just as well have a disjunctive definition.

Some types of disjunctive definition do a better job of telling us about similarities among kindmates than others do: cluster definitions can perform almost as well as conjunctive ones. The sufficient conditions that constitute the disjunction in a cluster definition are themselves conjunctions of simpler conditions. Achieving K-hood by meeting one sufficient condition might be a lot like achieving K-hood by meeting some other sufficient condition, if both of them have most of the same simpler conditions as conjuncts. Thus, different paths to K-hood might yet bestow similar sets of interesting properties on a thing and this can be read off the cluster definition. Even so, disjunctive definitions of theoretically-positing kinds are, in general, less likely to be motivationally adequate than conjunctive ones, because they are less informative about similarities among kindmates. This is why squeamishness about the disjunctive definition of jade would be warranted if jade were regarded, not as a practice-mandated kind, but as a theoretically-positing kind.

We now consider a couple of possible worries about our claim that for theoretical posits, conjunctive definitions are preferable to disjunctive ones. The first is that the conjunctiveness of a definition is a mere artifact of grammar, and so should not make any real difference to how good the definition is. Why would a truth-functional equivalent of a good conjunctive definition be any less good than that conjunctive definition?

Here is a conjunctive definition that is extensionally, criterially and motivationally adequate:

**Something is a square if and only if it is a rectangle and its sides are of equal length.**

$\forall x(Sx \equiv_{df} (Rx \ \& \ Ex))$

That definition is truth-functionally equivalent to the inelegant:

**Something is a square if and only if it is not the case that either it is not a rectangle or it does not have sides of equal length.**

$$\forall x(Sx \equiv_{df} \sim(\sim Rx \vee \sim Ex))$$

The latter definition is extensionally adequate, and maybe it is also criterially and motivationally adequate, since it picks out the very feature that is picked out by the conjunctive definition, albeit somewhat obliquely. Note, however, that the inelegant definition is in the form of a negation and thus is not a disjunctive definition. Crucially for our purposes, a conjunctive definition, constructed appropriately from theoretically interesting necessary conditions, cannot be transformed into a disjunctive definition by invoking only logical equivalences.<sup>15</sup>

The second worry is that although we have argued that conjunctiveness is a plus when you are defining theoretical posits, sometimes it seems as though you can have too many conjuncts. We tend to be wary of definitions in which a very large number of necessary conditions are deemed jointly sufficient. If you were told that you have a case of knowledge when and only when you have a belief which is justified, true, antecedently-plausible, counterfactually-resilient, testable and formed by a reliable process, the very length of this definition might caution you against it. Is such caution justified?

Well, if the most succinct conjunctive definition available for a kind K cites a fairly large number of disparate necessary conditions, it may not be obvious why we would be interested in the cases in which all of them are satisfied. Unless there is some theoretically-sanctioned

relationship among all the necessary conditions, one might suspect that the cases where they all happen to be satisfied are of little theoretical significance. Furthermore, one might question the lineage of the definition. One might suspect, quite reasonably in the case of this definition of knowledge, that earlier definitions were deemed extensionally inadequate, repaired by the addition of an extra necessary condition or two, still found wanting, modified again and so on. As we have said elsewhere, “It is well known that attempts to capture the rules we implicitly follow when we attribute *knowledge* to somebody, *meaning* to an utterer or *causation* to a sequence of events have run out of steam because they have failed to produce satisfactory analyses.... The definitions that typified these projects appeared more and more unnatural as time passed and the counterexamples kept on a-comin’. We can argue by induction that there is no point in pursuing these projects any further,”<sup>16</sup> either because extensional adequacy seems as remote as ever, or because the sequence of failures suggests that the kinds of necessary conditions that the definers have focused on are not ones from which one can fashion a conjunctive sufficient condition - we are looking in the wrong place.

We have, at any rate, defended our two central claims. Disjunctive definitions are appropriate and to be expected when what is being defined is a practice-mandated kind, because our identificatory practices and hence our taxonomic choices evolve in an unruly, haphazard manner. Conjunctive definitions are typically to be preferred when what is being defined is a theoretically-positing kind, because here we typically require underlying practice-independent similarities between kindmates to justify our ways of classifying things into kinds.

These findings may facilitate informed judgments about the adequacy of particular definitions.

Here is a conjunctive definition:

**Jazz: syncopated music of early twentieth century, African-American origin.**

Even a non-aficionado can immediately surmise that it is likely to be extensionally inadequate. Jazz is a practice-mandated kind. The evolution of the determining identificatory practice is probably messy and unlikely to be capturable so elegantly. This definition might serve as a gateway definition - as a first step in familiarising a newcomer with the boundaries of jazz - but its form alone suggests that it includes, or excludes, too much from the extension to count as adequate. Something disjunctive is almost bound to be better.

Meanwhile, suppose you are confronted with lots of data and an argument suggesting that, say, your cognitive ability, or your capacity to acquire a first language quickly, is largely innate in the way that eye colour is. And suppose your discussion of this argument is meant to be informed by the following disjunctive definition:

**A trait or process is innate just if either (1) there is some learning device tailored to a specific domain which accounts for its presence, or (2) no psychological story is available about how it was acquired.<sup>17</sup>**

In this situation, it would be reasonable for you to infer that this definition of innateness is motivationally inadequate, because mystery remains about why one would bother regarding the traits and processes which satisfy it as belonging to the same theoretically interesting category. Unless this definition can be bettered, innateness is surely not a theoretically useful posit.

Despite this important policing role, our findings about the worth of disjunctive definitions have fairly limited utility. It would be nice if we could ask, given any disjunctive definition, whether it

defines a practice-mandated kind or a theoretically-positing kind and, equipped with the answer to that question, proceed to pass tentative judgment on its viability. Unfortunately in many cases it is not obvious whether we are dealing with a practice-mandated kind or a theoretically-positing kind, or both. We end by supplying two examples of problem cases.

First, consider the kinds of stuff that are typically wheeled on as illustrations of natural kinds: water, gold, tigers and other cats. On the one hand, these have much in common with jade and jazz. The classificatory behaviours which render them salient are part of our ordinary identificatory practices and are not especially scientific. We parrot, “water is H<sub>2</sub>O”; still, it is no surprise that much of the stuff that we happily classify as water contains molecules of other substances and that the macroscopic properties (flow, conductivity, and so on) which enable us to identify water are not straightforwardly properties of H<sub>2</sub>O molecules themselves, but partially extrinsic properties which depend for their manifestation on the environmental context. As noted earlier, folk classificatory systems evolve haphazardly, so perhaps it is just plain fortuitous that we do not treat fool’s gold as gold, in much the same way that it is fortuitous that we do not include ska among the jazz. And who knows?: if all the cats turned out to be robots, maybe we would still regard them as cats - and maybe, just maybe, this would make them cats.

On the other hand, this last conjecture will sound to some like fingernails on the blackboard and that, according to some commentators, is because the identificatory practices which have led the folk to believe in water, gold and cats are to some extent committed to the claim that waterhood, goldhood and cathood are natural categories. Those who run this line think that water is a natural kind, as a matter of folk taxonomy: the folk are quite happy to defer to the chemists and, if

necessary, to revise their official view about what counts as a paradigm instance of water to bring it into line with the latest chemistry.

If the most extensionally adequate definition of water we can find turns out to be disjunctive, some may say: “Well, water is just a practice-mandated kind, so what else would you expect?” Others might counter: “Yes, water is practice-mandated, but the relevant practice requires that nothing can be a sample of water unless it is a sample of some theoretically-positing kind. Sure, the criteria in virtue of which it gets to be a sample of water had better be pretty close to the ones the folk use, but they need not be identical. Since the folk practice authorises us to regard water as a theoretically-positing kind, we should hold out hope for a conjunctive definition of water.”

This, of course, is like the debate that we earlier envisaged about the disjunctive definition of jade. Jade is a far less controversial case, however, since nobody thinks it is a natural kind. A more contentious analogue of the water debate could flare up among those who accept a “primary qualities” account of the colours. Again, a disjunctive definition of, say, the red stuff will satisfy some, but perhaps not those who hold that the practice of distinguishing the colours includes a commitment to the idea that each colour is identified with a single natural property of physical objects.

Our other example of a kind of stuff over which arguments about the viability of disjunctive definitions are bound to continue is art. Art is seldom paraded as an example of a natural kind, but it raises the same sorts of issues as water does. On the one hand, some fans of an institutional definition of art and some fans of a recursive, historical-intentional definition of art suggest that

something gets to be art because we have practices of creating and regarding certain things in certain ways and a body of concepts arising out of, or helping to articulate, these practices.<sup>18</sup> End of story - though the story about the practices themselves and about the resulting “art-world” is rich and complex.

On the other hand, those who proffer functionalist definitions of art or definitions which accord a central role in the determination of arthood to the potential for certain kinds of perceptual or cognitive response suggest that our art-making and art-regarding practices do or should track something objective.<sup>19</sup> Those who run this sort of line think that when an informed observer regards one item but not some other item as an artwork, her reasons for this verdict depend for their plausibility on practice-independent facts about the constitution of the works and our interactions with them. (The debate between legal positivists and natural lawyers has much in common with this debate about the nature of art.)

Whether this distinction between practice-dependent and practice-independent underpinnings for art even makes sense is part of the ensuing debate, but certainly, those in the former camp are more likely than those in the latter to allow that a disjunctive definition of art might be the best we can hope for.

Because of water, art and other cases which apparently problematise the boundary between practice-mandated and theoretically-posited kinds, there will doubtless continue to be disagreements about the credentials of disjunctive definitions. Even so, we think we have gone some way towards offering a reasonable justification for the on-going debates and some



apparatus for formulating the issues.

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<sup>1</sup> One might argue that the definition is motivationally adequate because there is a good enough reason for paying attention to the question of whether or not an item meets the stated criterion: namely, our inclusion of this definition here as an example. We are prepared to accept this argument. It suggests that it is very difficult to provide uncontroversial examples of motivationally inadequate definitions: as soon as you try to provide one, your reader can, with some justification, cite your own purpose as proof of motivational adequacy.

<sup>2</sup> See for instance Mark Kaplan, "It's Not What You Know that Counts," *Journal of Philosophy*, LXXXII, 7 (1985): 350-63.

<sup>3</sup> For instance, Robert Stecker argues that only a disjunctive definition can allow for the role played in the determination of art status by intentions and by historical, functional and institutional factors. See Stecker's "Is It Reasonable to Attempt to Define Art?" in *Theories of Art Today*. Noel Carroll, ed. (Madison: University of Wisconsin Press, 2000), 45-64: in particular 48-53.

<sup>4</sup> Vladislav Tatarkiewicz, "What is Art? The Problem of Definition Today," *British Journal of Aesthetics* 11, 2 (Spring 1971) 134-53: 150.

<sup>5</sup> Such a definition can be rewritten as a conjunction of necessary conditions, but only if some of the necessary conditions are disjunctive. In that case, the worries we are investigating for disjunctive definitions will arise in connection with the disjunctive necessary conditions.

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<sup>6</sup> Berys Gaut, “The Cluster Account of Art Defended,” *British Journal of Aesthetics* 45, 3 (July 2005), 273–88: see pages 273-274. Gaut in fact does not take himself to be giving a definition of art. In “ ‘Art’ as a Cluster Concept” (in *Theories of Art Today*, Noel Carroll ed., (Madison: University of Wisconsin Press, 2000), 25-44) Gaut claims that all definitions are conjunctive, and although he backs down from this in “The Cluster Account of Art Defended,” he still maintains that only conjunctive and simple disjunctive accounts count as definitions. This seems to be because he thinks something can only count as a definition if it is grasped and indeed applied by those who are distinguishing Ks from non-Ks. This might be a reasonable constraint on a definition of a concept, but as we note below, our concern is the definition of kinds of stuff.

<sup>7</sup> Paul Ziff gives this kind of definition of art in “The Task of Defining a Work of Art,” *Philosophical Review* 62, 1 (January 1953), 58-78.

<sup>8</sup> Jerry Levinson gives a recursive definition of art in “Defining Art Historically,” *The British Journal of Aesthetics* 19, 3 (Summer 1979), 232–50.

<sup>9</sup> Whether there ever could be a set of theory-internal definitions which are adequate in this sense is of course another matter. Plausibly it depends on whether there are natural kinds which have essential properties.

<sup>10</sup> These claims and the arguments for them that follow comport well with views expressed by Jaegwon Kim in “Multiple Realization and the Metaphysics of Reduction,” *Philosophy and Phenomenological Research* 52, 1 (March 1992), 1-26, reprinted in Jaegwon Kim, *Supervenience and Mind* (New York: Cambridge University Press, 1993), 309-336. See especially 322-324.

<sup>11</sup> Justine Kingsbury and Jonathan McKeown-Green, “Jackson’s armchair: The only chair in town?” in *Conceptual Analysis and Philosophical Naturalism*, David Braddon-Mitchell and

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Robert Nola eds. (Cambridge, Mass: MIT Press, 2009), 159-82: 165.

<sup>12</sup> There will be plenty of contested material (like smooth jazz) about whose status the community disagrees and plenty of borderline material (like much of Chick Corea's chamber music) which everybody should agree is only sort of jazz. A perfect definition of jazz, or of any relevantly similar institutionally-mandated kind, would reflect these sorts of phenomena.

<sup>13</sup> David Lewis, "Mad Pain and Martian Pain," in *Readings in the Philosophy of Psychology Volume 1*, Ned Block ed. (Boston: Harvard University Press 1980), 216-22. Lewis assumes a functionalist story about qualia and, for the sake of exposition, supposes that the pain-role is typically realized in human beings by the firing of c-fibres. Mad pain is what you have if, atypically, c-fibres firing in your brain do not realize the pain role: when the fibres fire, you do not get pain sensations; something else happens to you.

<sup>14</sup> Similarly, a response-dependent account of our concept of red (or any other colour) is compatible with a primary quality view about the property red (or any other colour). One can characterise our concept of red by saying that something is red if and only if it would appear to be red to any suitably-situated, suitably-endowed subject and one can also hold that a thing gets to be red if and only if it exhibits the right reflectance profile. How similar this colour case is to the case of jazz depends on whether the colours are institutionally-mandated kinds and that is a controversial issue which we touch on briefly at the end of the paper.

<sup>15</sup> Neither can one turn an adequate and otherwise conjunctive definition into an adequate disjunctive one by disjoining it with a gratuitous disjunct, since the resulting disjunctive definition would be criterially inadequate.

<sup>16</sup> Justine Kingsbury and Jonathan McKeown-Green, "Jackson's armchair: The only chair in town?" in *Conceptual Analysis and Philosophical Naturalism*, David Braddon-Mitchell and

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Robert Nola eds. (Cambridge, Mass: MIT Press, 2009), 159-82: 163-64.

<sup>17</sup> This definition draws on analyses of innateness by Fiona Cowie, but she is not to be held responsible for the use to which we are putting them. See *What's Within?: Nativism Reconsidered* (New York: Oxford University Press, 1999).

<sup>18</sup> George Dickie gives an institutional definition of art in *Art and the Aesthetic: An Institutional Analysis*. Ithaca: Cornell University Press 1974. Jerry Levinson gives a historical definition of art in “Defining Art Historically,” *The British Journal of Aesthetics* 19, 3 (Summer 1979), 232–50.

<sup>19</sup> See for example Monroe Beardsley’s “Redefining Art,” in *The Aesthetic Point of View: Selected Essays*, Michael Wreen and Donald Callen eds, (Ithaca: Cornell University Press, 1982), 298-315.