



## ORIGINAL ARTICLE

### **Epistemological reflections about the crisis of the DSM-5 and the revolutionary potential of the RDoC project**

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*This paper tests the predictions of an epistemological model that considered the DSM psychiatric classification (in the neopositivist and neo-Kraepelinian shape introduced by the DSM-III) as a scientific paradigm in crisis. As predicted, the DSM-5 did not include revolutionary proposals in its basic structure. In particular, the possibility of a dimensional revolution has not occurred and early proposals of etiopathogenic diagnoses were not implemented due to lack of specific knowledge in that field. However, conceiving the DSM-5 as a bridge between the present phenomenally based operational diagnostic criteria and the neuro-cognitively based RDoC criteria introduces an internal tension into the system. It is expected that a liberalization of the research criteria will occur, the DSM operational criteria being only one possible way to select research subjects.*

**Keywords:** philosophy of psychiatry, nosography, psychiatric classification, mental disorders

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#### **INTRODUCTION**

The DSM-5 (American Psychiatric Association, 2013) has been published in the midst of unusual controversy. Criticisms had always been advanced, but in the past the DSM system was the dominant paradigm and criticisms were mainly the unheard complaints of the looser schools of thought. Today it's different, because it is the credibility of the DSM itself that is in question. For example, Maj (2012, p.161) comments that since the publication of the DSM-IV:

Only a couple of decades have passed, but those already seem "good old days". Much of that enthusiasm and faith has now vanished [...] the questions I am now receiving from journalists [...] focus not so much on "new developments in the manual" (the most common question when the DSM-IV was launched) as on [...] "why we produce this classification at all, since we do not have a solid ground on which to base it"

It is noteworthy that, today, criticisms come not only from external sources (e.g., antipsychiatric or psychodynamic thinkers) but from the past editors of the DSM itself (e.g. Spitzer, 2008; Frances, 2009).

Maybe the main reasons that triggered the most vehement polemical reactions were: a) the fact that the editors of the DSM-5 frankly admitted that the neo-Kraepelinian project of discovering valid etiologies starting from reliable diag-

noses had failed: "research exclusively focused on refining DSM-defined syndromes may never be successful in uncovering their underlying etiologies" (Kupfer et al. 2002, p.xix); and b) their proposal to radically reform the DSM-IV structure: in order to discover etiologies - they say - we should discard the usual praxis, and "an as yet unknown paradigm shift may need to occur" (Kupfer et al., 2002, p.xix).

As a consequence, the debate on the future organizational structure of the DSM displayed all possible positions ranging from two extremes: "conservative" and "revolutionary" approaches.

Conservative scholars hold an "epistemic iteration" model, in which "each estimate improves on its predecessor so that, with a sufficient number of iterations, the process asymptotes to a stable and accurate parameter estimate" (Kendler, 2012, p.305). In this model,

"Psychiatric nosology is part of a time line. We are in the middle of a long historical process. [...] We should admire our predecessors [...] We need to regard our nosologic systems as structures of substantial value to our young field. We should seek to pass them on to our successors in yet better shape that we found them" (Kendler, 2012, p.320).

However, the basic preconditions are that: a) "There needs to be something out there [...] to-

ward which the iteration is aiming” (Kendler, 2012, p.306), and b) the DSM-III has to have put psychiatric nosography “in the right ball-park” (Kendler, 2012, p.309).

It seems that there is a crisis of confidence at least about the latter assumption:

“Not surprisingly, as the foundational science that ultimately led to DSM-III has approached a half-century in age, challenges have begun to emerge for clinicians and scientists alike that are inherent in the DSM structure” (American Psychiatric Association, 2013, p.10), and “The historical aspiration of achieving diagnostic homogeneity by progressive subtyping within disorder categories no longer is sensible” (American Psychiatric Association, 2013, p.12)

Revolutionary proposals are countless and not always important: e.g., Frances stresses that:

“Every month or so, someone (usually very smart and passionate) sends me a detailed proposal for a new diagnostic system offered as an alternative to the jumbled, pedestrian, atheoretical, and purely descriptive method used in DSM. [...] Unfortunately, none of these approaches, however elegant, is remotely ready for inclusion in the official system of psychiatric nomenclature” (Phillips et al., 2012, p.10).

However, it is possible to epistemologically analyze the general position of putative revolutionary systems within a single encompassing model inspired by the work of Thomas Kuhn (1962). Such a model (Aragona, 2006, 2009a, 2009b) was proposed to make understandable the structural problems that are responsible for many “empirical” difficulties encountered when the diagnostic criteria of the DSM-III (and later editions) have been applied in clinical and research settings: internal heterogeneity of the diagnostic categories, excessively high rates of comorbidity, lack of prognostic and treatment specificity, questionable validity, and so on. The main thesis is that such “empirical” difficulties can be better understood if they are reconceived as Kuhnian “anomalies”, i.e. apparently empirical outputs which largely depend on the way the system is internally structured<sup>a</sup>. A defense of some good reasons to apply a Kuhnian model to a classification system can be found elsewhere (Aragona, 2009c), as well as a detailed discussion of its characteristics, results and limitations (Aragona, 2006, 2009a, 2009b). For reasons of space, only

its main assumptions are presented in this paper: a) the DSM-III represents the birth of a new paradigm. This is shown by its effect of restructuring the nosological debate around its own categories and by its unifying and dominant role in the field. Before DSM-III, many classification systems were used by different clinicians with different theoretical orientation. After the DSM-III, almost anyone had to uniform clinical, research and teaching activities according to the DSM criteria. The introduction of the operational diagnostic criteria has been considered as the main reason for such a paradigmatic birth; b) the DSM paradigm has recently entered a state of scientific crisis due to internal “anomalies” (in Kuhnian terms), i.e., lack of internal homogeneity of the DSM diagnostic categories, excessively high rates of comorbidity, and so on; c) usually a state of scientific crisis is resolved when the old paradigm is replaced by radical theoretical shifts, i.e., when a “scientific revolution” takes place; d) in order to accomplish a scientific revolution, the new model must reframe the matter in a way that resolves (sometimes vanishes) the basic anomalies. This means that a scientific crisis of the old paradigm is just a necessary but not sufficient precondition for a scientific revolution.

This article analyses the predictions advanced by this Kuhnian reformulation of the nosographic debate in psychiatry. In particular, such predictions will be contrasted to what actually happened during the revision process leading to the DSM-5. Finally, the revolutionary potential of the RDoC project will be explored.

## **PREDICTIONS ABOUT THE DSM-5**

In this section the main predictions of the Kuhnian model about the DSM-5 will be discussed and contrasted to the DSM-5 final output.

### ***1. Changing the general definition of “mental disorder”***

Considering the flaws of the DSM-IV general definition of mental disorder, it was considered:

“desirable that DSM-V should, if at all possible, include a definition of mental disorder that can be used as a criterion for assessing potential candidates for inclusion in the classification, and deletions from it” (Rousanville et al., 2002, p.3).

In particular, there was a strong support by many

to Wakefield's (1992) "harmful dysfunction" definition (for a critical analysis see Aragona, 2009d). Moreover, other proposals were also advanced by influential experts in conceptual issues related to psychiatry (e.g., Stein et al., 2010).

**Prediction.** The following picture was envisaged:

a) the general definition of mental disorder is likely to be changed (Aragona, 2006);  
b) it is likely that this will be done following Wakefield's proposal (Aragona, 2006);  
c) in any case, such a change would not modify the structure of the system, because it is not revealed by the general definition but it is instantiated by the operational diagnostic criteria concretely applied in the individual mental disorders (Aragona, 2006; 2009d).

Predictions (a) and (b) were based on the appraisal of the major lines of reasoning that were debated at that time (and of their relative force in the concrete arena: e.g., personal position of the author making a proposal within the DSM committees, academic sponsors, impact factor and visibility of the journals where some ideas were published, and so on.).

Prediction (c) was more strictly an epistemological prediction, that is a prediction resulting from an imaginative understanding of what would happen at the structural level if some parts of the structure would be changed. Epistemological predictions of this sort are similar to what happens when an engineer changes some parts of the model of a building in order to test its resilience; the main difference is that epistemological predictions are purely logical, while the engineers largely use mathematical models.

For reasons of space, in the next paragraphs we will not specify which one of these two different kinds of predictions are at play (based on the "spirit of the time", as (a) and (b), or on epistemological reasoning, as in (c)). However, we are confident that the reader will be able to distinguish them quite easily.

**Testing.** a) the DSM-5 general definition of mental disorder slightly changed. In particular, a mental disorder is now defined as a "syndrome" that "reflects a dysfunction in the psychological, biological, or developmental processes underlying

mental functioning" (American Psychiatric Association, 2013, p.20);

b) Wakefield's idea that at the basis of mental disorders there is a dysfunction is substantially accepted, but the complementary part of his definition (i.e., the harmfulness of the condition<sup>b</sup>), as well as the evolutionary conceptualization of the nature of the dysfunction, are not considered;  
c) the slight changes of the general definition do not affect at all the general structure of the DSM, whose "core" is still "the operationalized sets of diagnostic criteria" (American Psychiatric Association, 2013, p.10).

**Overview.** The prediction was partially confirmed. The general definition of mental disorder was changed but significant components of Wakefield's proposal were not included in it. The more general prediction that such general changes would not have affected the basic structure of the DSM-5 was confirmed.

## **2. Simplifying the operational diagnostic criteria**

Considering that the DSM-IV had become too complex and that it had become the servant of too many different uses (often managed by non-psychiatrists), one possibility was to simplify the operational diagnostic criteria in order to facilitate their use by general practitioners and other non-medical figures working on mental health.

**Prediction.** "The problem is that the introduction of such a simplification into the DSM would disrupt it, and this is not possible" (Aragona, 2006, p.188). Hence, a significant simplification of the diagnostic criteria in the DSM-5 was not expected.

**Testing.** The operational diagnostic criteria were not simplified in the DSM-5. Quite the opposite, the DSM-5 has been criticized for having made them more complex by introducing new subtypes and specifiers of severity.

**Overview.** The prediction was confirmed.

## **3. Transcultural issues**

It was proposed to put new emphasis on the influence of cultural issues on the psychiatric diagnoses. In particular, any diagnostic revision was suggested to follow:

"two general directions: 1) clear delineation of core diagnostic criteria, desirably applicable to all societies, cultures, and countries throughout the world,

and 2) recognition of cultural and cross-cultural variants in symptom definition and behavioral and symptomatic manifestations” (Rousanville et al., 2002, p.17)

**Prediction.** “these issues will not lead to concrete changes in the DSM-V diagnostic criteria” (Aragona, 2006, p.188).

**Testing.** The DSM-5 puts more emphasis than its predecessors on cultural issues, replacing the culture-bound syndromes with a glossary of cultural concepts of distress and with a cultural formulation interview. Three concepts are distinguished: the cultural syndrome, the cultural idioms of distress, and the cultural explanation or perceived cause of illness experience.

**Overview.** Such changes are significant and useful. However, the prediction that changes would not have directly affected the operational diagnostic criteria was confirmed.

#### 4. Changing the multi-axial system

It was proposed to modify the DSM Axes in order to insert in them the emerging genetic, pathophysiological, and neurobiological evidence (Gruenberg and Goldstein, 2003).

**Prediction.** “It is likely that information of this kind will be included into the DSM-V [...] But today it is difficult to say which proposals will be accepted” (Aragona, 2006, p.189).

**Testing.** The DSM-5 radically changed the former multi-axial system, but not in the predicted direction of making them increasingly more complex by introducing new research evidence. On the contrary, the DSM-5 “has moved to a non-axial documentation of diagnosis” (American Psychiatric Association, 2013, p.16)

**Overview.** The prediction was not confirmed. Instead of the expected changes, the DSM-5 took another, unexpected direction.

#### 5. Adoption of the spectrum model

The suggestion was to replace the “splitting” approach of the DSM, which was responsible of high comorbidity and inappropriate proliferation of diagnostic labels, with a “lumping” approach. This should have put together distinct disorders in a unique, bigger meta-category, on the basis of similarities of various kind (phenomenal, epidemiological, etiological, etc.). The result should have been the creation of larger spectra (e.g., obsessive-compulsive spectrum, bipolar

spectrum, and so on).

**Prediction.** a) In many cases the putative similarities are trivial and unspecific, while more stringent etiological commonalities are not yet available. As a consequence, the proposal is problematic and unlikely to be realized (Aragona, 2006, p.147); b) If the final result would be just that some disorders will change their place, from a chapter of the DSM to another one, then the proposal is weak because it does not modify at all the DSM basic structure (Aragona, 2006, p.147).

**Testing.** a) As expected, a spectrum approach was not radically implemented, the DSM-5 mental disorders being based on the same organizational criteria of previous editions. However, there are significant exceptions: e.g., the Autism Spectrum Disorder. Whether this represents a real improvement over previous classifications differentiating among several kinds of autistic disorders has to be seen. For example, by using it, the etiologic research will be enhanced or hindered (by a concomitant increase of the internal heterogeneity of the construct)? In any case it is the first time that a real spectrum is included in the official diagnostic criteria;

b) The DSM-5 significantly regroups many mental disorders. For example, Pica and Rumination Disorder were moved to the chapter “Feeding and Eating Disorders”, the Schizotypal (Personality) Disorder is now enlisted *also* in the chapter “Schizophrenia and Other Psychotic Disorders” (although its diagnostic criteria are still to be found in the chapter “Personality Disorders”), etc. Such a regrouping promises to “enable future research to enhance understanding of disease origins and pathophysiological commonalities between disorders” (American Psychiatric Association, 2013, p.12-13). In the meanwhile, what is currently available is just a change of place, without any significant change of the DSM basic categorical structure.

**Overview.** The kernel of this prediction was confirmed: the spectrum model has not been applied consistently, and the change of place of some disorders does not influence the general structure of the DSM. However, what was not predicted, and indeed represents a significant change, is the creation of an actual spectrum,

i.e. the Autism Spectrum Disorder. It might seem to be just a little thing but if successful it could have relevant consequences for the future.

### **6. Shifting to a dimensional diagnosis**

The creators of the DSM-III were quite sure that the enucleated categories represented the first step of a scientific approach that would have ended in the discovery of their underlying etiologies. However, the editors of the DSM-IV were not so certain as before; they envisaged the possibility of a dimensional shift, although in future editions:

“It was suggested that the DSM-IV classification be organized following a dimensional model rather than the categorical model used in DSM-III-R. A dimensional system classifies clinical presentations based on quantification of attributes rather than the assignment to categories and works best in describing phenomena that are distributed continuously and that do not have clear boundaries. Although dimensional systems increase reliability and communicate more clinical information (because they report clinical attributes that might be subthreshold in a categorical system), they also have serious limitations and thus far have been less useful than categorical systems in clinical practice and in stimulating research. [...] Nonetheless, it is possible that the increasing research on, and familiarity with, dimensional systems may eventually result in their greater acceptance both as a method of conveying clinical information and as a research tool” (American Psychiatric Association, 1994, p.xxii)

Several indicators were suggesting that a dimensional shift might have occurred in the DSM-5. A basic reason was the growing awareness that: a) the DSM-IV categories were not clearly distinct (i.e., the DSM diagnostic criteria were unable “to carve the nature at its joints” due to high rates of mixed cases and excessive comorbidity); b) the distinction between Axis I and Axis II, as well as the distinction between the cases above and below the diagnostic threshold, were blurred; c) many symptoms were not specific of any diagnostic category, suggesting that they could be considered more usefully as basic traits deserving to be evaluated in any patient and ranging from “normal” low scores to “pathological” higher scores.

Various dimensional proposals might be derived from the analysis of these limits of the categorical diagnosis, including the following three (6.1-6.3); the fourth (6.4) is not properly dimen-

sional but is reported because it is relevant for future research.

**6.1** To radically shift from the categorical system (in which the patient either has or has not the index disorder) to a dimensional model (any patient has his/her own personal profile resulting from the quantitative scoring of X basic dimensions).

**Prediction.** Despite its usefulness in some respects (e.g., resolution of the comorbidity problem: Aragona, 2009a), a radical dimensional shift also presents many problems. For example, it shares with the categorical diagnosis some limits, like the internal heterogeneity affecting both categories and dimensions. Most importantly, there is no agreement at all on which one among many available dimensional systems should be used. It was claimed that:

“different alternative proposals being in competition, they lose their force fighting each other, and this weakens their revolutionary potential. Hence, the dominant categorical system is in crisis but [at least for the moment] the revolutionary dimensional movement has been warded off” (Aragona, 2006, p.173)

**Testing.** The DSM-5 retains the general categorical structure of previous editions.

**6.2** If not a radical shift of the entire system, the dimensional diagnosis might at least replace the categorical DSM-IV personality disorders. A consensus was already reached about the severe problems affecting the DSM-IV Axis II: above all the extremely high rates of comorbidity between personality disorders, within and across the personality clusters, and the massive use of the “not otherwise specified” label.

**Prediction.** The criticism reported above (6.1) was directed not only to a dimensionalization of the entire system but also to proposals of dimensionalizing personality traits and diagnoses (as in 6.2).

**Testing.** The DSM-5 failed to reshape personality disorders as dimensional diagnoses:

“Although the benefits of a more dimensional approach to personality disorders have been identified in previous editions, the transition from a categorical diagnostic system of individual disorders to one based on the relative distribution of personality traits has not been widely accepted. In DSM-5, the categorical personality disorders are virtually unchanged from the previous edition” (American Psy-

chiatric Association, 2013, p.xliii)

A “hybrid” model and a “dimensional” profile of personality trait expression are included in Section III, but only for future research. The official diagnosis remains based on categories.

**6.3** A third possibility was to integrate within the categorical diagnoses a dimensionalization of some of their features. In this case the system would remain a categorical one, the analysis of relevant dimensions being accessory.

**Prediction.** Such a dimensional integration of the categorical diagnosis was considered as a viable option:

“It is already possible to substantially modify the DSM through the integration of the categorical and dimensional diagnoses, the latter to be used in order to sub-typify the categorical diagnoses. [...] Researchers will only have to pragmatically choose those dimensions carrying the most useful information, and to measure whether variations on these dimensions influence or not the clinical variables. [...] What is obtained is a *sui generis* dimensional sub-typifying [...] the first step remains the categorical diagnosis, which continues to be the real classification. By adding dimensional subtypes to the disorders, the aim is to gradually enucleate more homogeneous groups” (Aragona, 2006, p.204-206)

**Testing.** In the DSM-5, dimensional specifiers are provided “to guide clinicians in rating the intensity, frequency, duration, symptom count, or other severity indicator of a disorder” (American Psychiatric Association, 2013, p.22). They “provide an opportunity to define a more homogeneous subgrouping of individuals with the disorder who share certain features” (American Psychiatric Association, 2013, p.21-22).

**6.4** Finally, the DSM-5 claims that future research will focus on “the underlying dimensional features” of current disorders (American Psychiatric Association, 2013, p.8), and that the DSM-5 itself has already moved in this direction. Accordingly, by “reordering and regrouping the existing disorders” (American Psychiatric Association, 2013, p.10) the new organizational structure should “serve as a bridge to new diagnostic approaches without disrupting current clinical practice or research” (American Psychiatric Association, 2013, p.13). This is what is called “the more dimensional DSM-5 approach” (American Psychiatric Association, 2013, p.13). Such

a possibility of a dimensional approach based on “underlying features” was not considered as dimensional in the Kuhnian-based analysis of the psychiatric classification (Aragona, 2006). Accordingly, there is neither prediction nor testing of this approach. It has to be noted that here “dimensional” refers not to the dimensional diagnosis as it was usually debated but to the study of transnosographic basic cognitive domains, as proposed by the Research Domain Criteria project of the American National Institute of Mental Health (NIMH) (Insel et al., 2010). The DSM-5 explicitly acknowledges it at pages 8 and 11.

**Overview.** As predicted, a structural crisis of the DSM categorical system is now widely recognized but this had not resulted in a dimensional revolution. As expected, this did not happen neither in general, nor in the more restricted domain of personality. The main reason for this unaccomplished revolution is probably the lack of agreement on which one, of the several dimensional models available, should be adopted.

As suggested, the DSM-5 moved in another, less radical but viable direction, that of integrating dimensional features within the already existing diagnostic categories.

What was not expected was the last use of the term dimension (6.4), to mean those underlying cognitive domains whose dysfunction might be responsible of the phenomenal picture. More than a dimensional approach, this is an “etiopathogenic” one, and we will return on it in the next session.

### **7. Shifting to an etiopathogenic classification**

As time passed on, many started to believe that the problem was not the categorical approach in itself, but the very fact that in psychiatry a phenomenal description was not a suitable starting point to find etiologies. The perceived risk was that of a vicious circle incapable of escaping the phenomenal level. The consequent revolutionary proposal was not to shift from categories to dimensions (both being phenomenally-based) but to focus directly on putative etiopathogenesis as the starting point of the classification. Here the revolution consists in this: while in the neo-Kraepelinian model the direction was from the phenomenal picture to the search of underlying etiology, in etiopathogenic approaches the direc-

tion is from the biological alteration, ahead to the resulting behaviors. This could be conceived at different levels:

**7.1** In the 2002 Research Agenda for the DSM-V it was proposed to replace the original DSM-III five axes as follows:

“In this system, Axis I would be set aside for recording the patient’s *genotype*,[...] Axis II could be used for recording the patient’s *neurobiological phenotype*, [...] The neurobiological phenotype may be discerned by neuroimaging, cognitive evaluation, and neurophysiological testing. [...] Axis III would be the *behavioral phenotype*, which could detail the severity and frequency of specific cognitive, emotional, and behavioral disturbances [...] Axis IV would be *environmental modifiers or precipitants* and would call for the recording of environmental factors that may alter the neurobiological and behavioral phenotypes. [...] Finally, Axis V would be devoted to *therapeutics*” (Charney et al., 2002, p.71)

**Prediction.** It was stated that such a proposal was neither incoherent nor contradictory. However, it was judged as practically impossible to be implemented in today’s psychiatry, due to lack of knowledge about the specific contents requested to fill these axes (for example, we do not know specific genes responsible of psychiatric “behavioral phenotypes”) and also about the possible mechanisms linking the different levels represented by the five axes. Accordingly, this proposal was considered just as a methodological exercise, built on the belief and trust that in the future we would know what is presently unknown (Aragona, 2006).

**Testing.** As expected, the DSM-5 did not reshaped its axes etiopathogenically; the model remains a neo-Kraepelinian one, based on the phenomenal description of mental disorders fulfilling descriptive and neopositivist operational diagnostic criteria (see also Aragona, 2013).

**7.2** Cognitive researchers and philosophers suggested to ground psychiatric diagnoses neither on the micro-level (the genes, as above, or other molecular/biochemical features) nor on the macro-level of behavior and personality. They proposed to focus on an intermediate level, that of the cognitive computational modules (Murphy, 2006, Sirgiovanni, 2009), mental disorders being conceived as “breakdowns of neurocomputational mechanisms” (Sirgiovanni, 2009, p.47).

The Kuhnian reformulation of the psychiatric

classification discussed in Aragona (2006) was not yet aware of such neuro-cognitive developments, so no prediction was advanced about them. However, Sirgiovanni (2009, p.48) rightly stressed that:

“At present such an approach cannot provide a systematic reformulation of psychiatric taxonomy, but it could suggest interesting directions for future psychiatric research”

Accordingly, it can be easily inferred that if aware of these models Aragona (2006) would have similarly predicted that it was too early to include these models in any new psychiatric classification.

The same applies to the following more recent case, that of the Research Domain Criteria (RDoC) project. The RDoC project is theoretically in line with the neuro-cognitive models described in this section. However, due to its importance in the present debate it will be discussed apart.

**7.3** The DSM-5 use of the term “dimensions” for the Research Domain Criteria (RDoC) project risks to be misleading, because as noted above (see 6.4) it does not refer to the usual phenomenal dimensions derived from psychometric testing.

The Research Domain Criteria (RDoC) project should be more appropriately conceived as a recent development of the neuro-cognitive perspective, suggesting:

“to shift researchers away from focusing on the traditional diagnostic categories as an organizing principle for selecting study populations towards a focus on dysregulated neurobiological systems” (First, 2012, p.15)

The main difference from the cognitive models discussed above is that the RDoC project is not so strictly committed to a massive computational theory of cognitive modules as they are, while it retains and probably increases the role of research in neuroscience.

The RDoC proposal is not a diagnosis in its classical sense, but a matrix based on basic areas of psychological (cognitive) functioning to be correlated to corresponding brain circuits. As such, it has no concrete effects on the DSM-5 structure (which, as seen, is still the neo-Kraepelinian and neopositivist structure introduced by

the DSM-III). However, being directly proposed by the NIMH and strictly related to the research funding dynamics, in the next years it will become a *must do* for many new research projects. The hope is that when enough new findings will be available thanks to the RDoC approach, then a neuro-cognitive paradigm shift will occur.

However, despite the RDoC project will surely increase its relevance in the next years, its long-term future is difficult to predict. As suggested by Frances, on this respect we need to be cautious:

“the obstacles are huge. The complexity of the brain has dwarfed the reach of even our most powerful research tools. Our science will advance, but probably will uncover vast new territories of our ignorance for every new beachhead of new knowledge. It may take decades of concerted effort for this project to bear clinical fruit and impact on the diagnostic system. It is an open question whether NIMH will be able to mount the necessary sustained commitment. [...] RDoC is indeed our most promising seed - let us hope it grows and thrives. But the prospects for its future success are unpredictable in these early days” (Phillips et al., 2012, p.11)

**Overview.** As predicted, an etiopathogenic revolution did not occur, and this was basically due to significant lack of knowledge, already evident years ago. This made impossible to reframe the DSM according to an etiopathogenic model. The new neuro-cognitive developments seem to be more promising, but it is to be seen if they will bear concrete fruit.

## CONCLUSIONS

In this era of scientific crisis of psychiatric classification, possible alternatives range between two extremes. At one side there are revolutionary systems suggesting that the current system should be totally dismissed and substituted by some new, “incommensurable” system. On the other side there are “conservative” scholars who easily show that the state of our knowledge is not ready to include such proposals, and that a conservative approach has to be preferred to avoid to throw out the baby with the bath water. Two by-products of this opposition are that: a) those talking about paradigm shift and scientific revolutions risk to be seen as unreliable dreamers, while b) the rejection of the revolutionary proposals gives the (false) impres-

sion that the current system is the right one and that we should simply refine it.

The epistemological model discussed in the present article:

- a) suggested a scientific crisis of the current paradigm and gave the epistemological tools to analyze alternative proposals (Aragona, 2006, 2009a);
- b) discussed the reasons for predicting that despite its status of crisis the DSM-5 would have not included revolutionary proposals in its structure (Aragona, 2006);
- c) tested such predictions by contrasting them with the concrete structure of the DSM-5 (this paper).

As such, it differs from the above reported opposing models because while it talks of a paradigmatic crisis, it is not the partisan of the new at any cost. On the contrary, it is cautious concerning the usefulness and viability of the claimed revolutions, and in this it supports those conservative views stating that the DSM is not ready to radically change. However, it also contests the idea that from the fact that the revolutionary models are unready to change the paradigm, we should conclude that the DSM is “in the right ball-park”. The DSM is in crisis due to its internal weakness, and the lack of valuable and ready alternatives does not change anything on this respect.

The emerging picture is that, as expected, the DSM-5 is a rather conservative system because its “core” remains the extensive use of neopositivist operational criteria to categorize mental disorders. The basic anomalies of the system being unresolved, the DSM still remains a system in scientific crisis waiting for a revolutionary solution.

What was not predictable years ago is that the NIMH would have decided to abandon the neo-Kraepelinian project subtending the DSM-III and to replace it with a revolutionary etiopathogenic approach, i.e. the RDoC project. The DSM-5 tries to consider both views in proposing itself as a “bridge”. However, and this is the prediction for the next years, in doing so the DSM-5 introduces in itself a tension which is probably a weak spot, because the two views are opposite and incompatible. It is likely that in the follow-



ing years clinicians and researchers will be requested to continue to use the DSM diagnoses to communicate, while they will be more free than today to use other ways of assessment for more defined needs.

In this context, and considering their expected effect on research funding, the RDoC definitions are likely to be widely adopted from an increasing number of research centers. If this is the prelude for a revolution is too early to say; in the history of psychiatry it happened many times that a strong confidence on the power of experimental results turned out to be a disappointment.

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